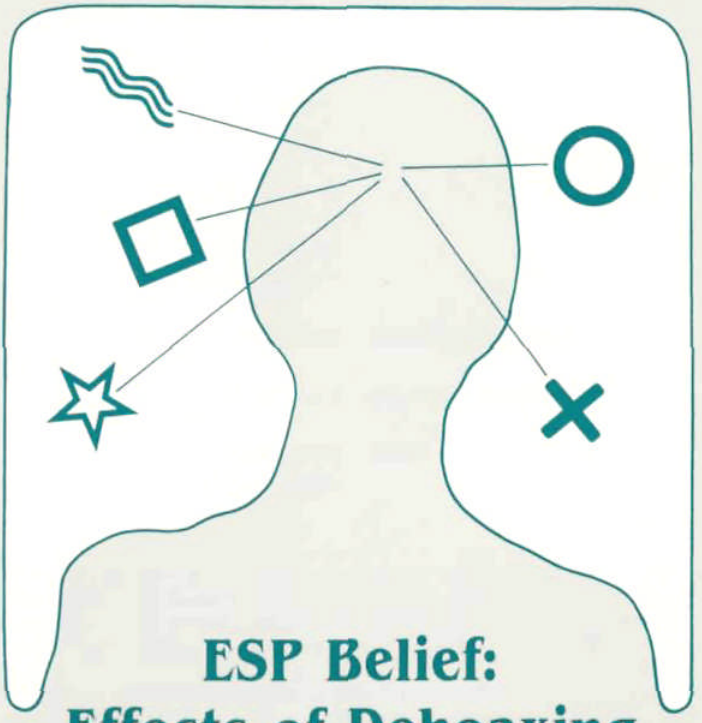
the Skeptical Inquirer

THE ZETETIC



ESP Belief: Effects of Dehoaxing

UFO Hoax / UFOs and the CIA

Claims of Space Ancestors

Don Juan and Piltdown

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VOL. IV NO. 3 SPRING 1980

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News and Comment

UFOs, the CIA and the New York Times

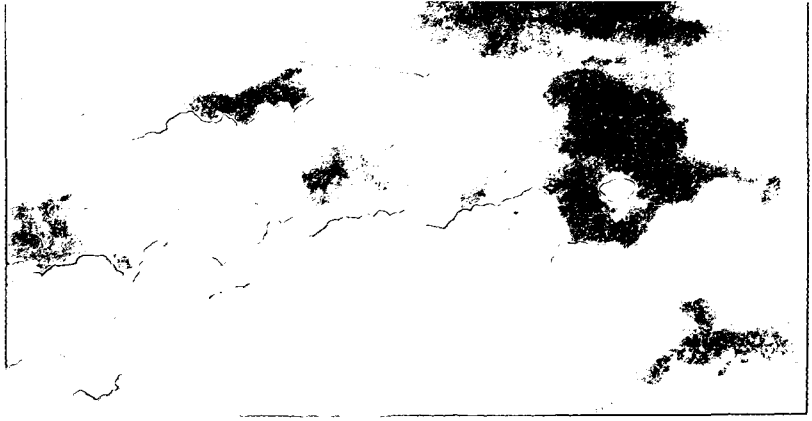
For many years the *New York Times* has been sharply criticized by those who seek to promote public belief in unidentified flying objects, because of the paucity of its coverage of the subject. Now the *Times* is being hailed by these former critics, and with good reason.

UFO promoters are praising the *New York Times Magazine* for its October 14, 1979, feature by free-lance writer Patrick Huyghe, which was headlined "UFO Files: The Untold Story," with a subhead that read "Though officials have long denied that they take 'flying saucers' seriously, declassified documents now reveal extensive Government concern over the phenomenon."

If news officials of the *Times* believed the thrust and contents of the Huyghe article, clearly the situation must be a "Cosmic Watergate" coverup, as UFO-lecturer Stanton Friedman has so often characterized it. For example, the article began by highlighting a series of UFO reports from U.S. Air Force SAC air and missile bases that occurred four years earlier, in the fall of 1975, that suggested that these vital installations were being visited by craft of unknown origin. If extraterrestrial craft were reconnoitering our key military facilities, having penetrated national air space undetected by air and defense radars, perhaps a "Cosmic Pearl Harbor" was in prospect and alleged efforts to suppress news of such intrusions (if true) would indeed amount to a "Cosmic Watergate."

One would have expected the *Times* to have promptly formed a team of its best investigative reporters for a journalistic assault on what appeared to be the biggest story of all time. Yet, so far as I can determine, news officials at the *Times* simply ignored the Huyghe article.

Similar "journalistic oversight" occurred many months earlier at the *Washington Post*, whose investigative efforts had exposed the original Watergate scandal. The January 19, 1979, issue of the *Post* carried a front-page feature, by Ward Sinclair and Art Harris, recounting the same SAC-base UFO incidents under the headline "What Were Those Mysterious Craft?" The syndicated article, which was carried by major newspapers around the country, began: "During two weeks in 1975, a string of the nation's supersensitive nuclear missile launch sites and bomber bases were visited by unidentified, low-flying and elusive objects, according to Defense Department reports." Yet in the many months since this ominous-sounding article appeared,



UFOs—Identified, by Philip J. Klass

"UFO" (right-center) photographed from cockpit of a Canadian Air Force F-86 in 1956 while flying over an intense thunderstorm over Canadian Rockies. The object is believed to be a giant electrical plasma, similar to "ball lightning," a freak atmospheric electrical phenomenon.

the *Post*'s news officials also seem to have been derelict about digging into this apparent coverup.

When I later talked with Sinclair about his article, he admitted that when he wrote it he was not aware that a major feature story about the same SAC-base incidents had been published only a month earlier in the December 10, 1978, issue of *Parade* magazine, the popular Sunday supplement distributed with the *Washington Post*. The *Parade* article, written by Michael Satchell, carried the headline "UFOs vs. USAF: Amazing (but true) Encounters." Curiously, the essence of Satchell's article had been published a year earlier by the *National Enquirer*, in its December 13, 1977, issue, under the headline "UFOs Spotted at Nuclear Bases and Missile Sites."

Considering the readership of the *National Enquirer*, *Parade*, the *New York Times Magazine*, and the *Washington Post*, as well as other major newspapers that also carried the *Times* and *Post* articles, it is curious that there were no investigative reporters, eager to win a Pulitzer Prize and achieve world fame, who were smart enough to recognize the "Cosmic Watergate" implications of these articles—*if* they believed what they read. Even if the "UFOs" over SAC bases were not extraterrestrial craft, as the articles implied, and were "only" Soviet or Cuban aircraft on reconnaissance missions, it would seem to be a "helluva story."

(Although my more than 13 years of investigating famous, seemingly mysterious UFO incidents have made me a skeptic, as a senior editor of *Aviation Week & Space Technology* magazine, I decided that the SAC-base incidents did warrant further investigation. The results of my investigation, which will be detailed in a book now in progress, indicated that neither extraterrestrial nor foreign aircraft were involved in the incidents.)

Huyghe's article in the *Times Magazine* also covered the contents of the once-classified government files dealing with UFOs, principally from the Central Intelligence Agency, which were made public in December 1978 through the Freedom of Information Act. Huyghe reported: "Official records now available appear to put to rest doubts that the Government knew more about UFO's than it has claimed over the past 32 years." Having personally studied the nearly one thousand sheets of UFO-related material released by the CIA in late 1978 (only a third of which were of import), I can vouch for the accuracy of this statement.

Yet shortly after these files were made public, the *New York Times*, in their January 14, 1979, issue, carried a long news story quoting William Spaulding, the head of a national UFO organi-

zation, who claimed that the CIA files revealed that "the Government has been lying to us all these years." The article said that, according to Spaulding, "after reviewing the documents, Ground Saucer Watch believes that UFO's do exist, they are real, the U.S. Government has been totally untruthful and the cover-up is massive."

Huyghe was grossly inaccurate when he wrote that newly released files showed that "the [UFO] phenomenon has aroused much serious behind-the-scenes concern in official circles. Details of the intelligence community's *protracted* obsession with the subject of UFO's have emerged." (Emphasis added.) Huyghe went on to claim: "But it is the CIA that appears to have played the key role in the controversy, and may even be responsible for the Government's conduct in UFO investigations throughout the years."

What the CIA files really reveal is that the agency first became actively—but only briefly—interested in UFOs more than a quarter-century ago, in the summer of 1952, in the wake of several incidents in which unidentified radar blips appeared on the displays of a radar installed at Washington's National Airport, prompting the USAF to launch interceptor aircraft to investigate. (A subsequent formal investigation by the then Civil Aeronautics Administration showed that the spurious radar blips were the result of anomalous propagation due to temperature inversions and had been experienced at numerous other such radars without precipitating a UFO incident.) The several incidents over the nation's capital, which had made headlines around the country, had prompted inquiries by the White House to the CIA, which, understandably, had triggered its official interest.

The CIA had secretly convened a panel of distinguished scientists, headed by H. P. Robertson of the California Institute of Technology, which met in mid-January 1953 to consider the most impressive UFO incidents then in the USAF's files. After examining these "best cases," the panel concluded that *none* were "attributable to foreign artifacts capable of hostile acts."

Prior to the meeting of the Robertson panel, once-secret CIA papers revealed that *some* agency officials had been anxious to have the National Security Council authorize the CIA to initiate a major UFO investigation. Such an authorization would be needed because the USAF earlier had been given primary responsibility for investigating UFOs. When a copy of the Robertson panel report was transmitted to the Intelligence Advisory Committee on February 18, 1953, by committee secretary James Q. Reber, he wrote: "The results of the panel's studies have moved the CIA to conclude that no National Security Council Intelligence Directive [authorizing the CIA to launch a UFO investigation] on this subject is warranted."

The once-secret CIA files contain a number of memoranda from second- and third-tier officials discussing what should be done with UFO material accumulated during the previous six months. One memo, dated March 31, 1953, expressed the view that "very little material would be worth saving except as samples of indicative or unusual reports. The rest I recommend be destroyed." The memoranda make it clear that none of the officials wanted his own division to be saddled with the task of maintaining UFO files and analyzing new UFO reports. The head of the division that was finally designated for the unwanted task wrote a memo on July 3, 1953, saying he "planned to handle the project with part-time use of an analyst and a file clerk."

The CIA files also contain a memo dated August 8, 1955, from the chief of the Physics & Electronics Division, to his superior, the Acting Assistant Direc-

tor for Scientific Intelligence, recommending that his division's responsibility for monitoring new UFO reports be terminated. The CIA official noted that during the two years that his division had been following UFOs "no intelligence of concern to national security has been developed from the project." And he *complained* that his division had been spending "between 10 and 25 analyst hours per month" (a small fraction of one full-time employee's efforts) in reviewing UFO reports and "about half that much clerical time."

That provides an accurate indication of the extent of the CIA's official interest in UFOs *nearly a quarter of a century ago*. And the CIA files show a decline of interest in UFOs since that time. The CIA files contain internal memoranda on the subject of UFOs as recent as April 3, 1976, which offer added confirmation that the CIA had no official interest in the subject. The memoranda—names are censored because of Privacy Act considerations—concern a report submitted to the agency by a U.S. scientist speculating on UFO propulsion systems. The scientist wanted to know if the paper should be classified for national security reasons; he also asked if the U.S. government, possibly the CIA, was secretly investigating UFOs. (In late 1969, the USAF announced that it was officially closing down its UFO investigative office and getting out of the UFO business.)

The internal CIA memorandum of April 3, 1976, says: "It does not seem that the Government has any formal program in progress for the identification/solution of the UFO phenomena... At the present time, there are offices and personnel within the agency who are monitoring the UFO phenomena, but again, *this is not currently on an official basis.*" (Emphasis added.) The memo continued: "We wish to stress again that there does not now appear to be any special program on UFOs within the intelligence community."

This is what the once-secret CIA files on UFOs really reveal, as I stressed to Patrick Huyghe when he interviewed me in preparation for writing his article for the *New York Times Magazine*. But what did Huyghe write and the *Times Magazine* publish? "Ever since UFOs made their appearance in our skies in the 1940's, the phenomenon has aroused much serious behind-the-scenes concern in official circles. Details of the intelligence community's protracted obsession with the subject of UFO's have emerged over the past few years with the release of long-withheld Government records obtained through the Freedom of Information Act... It is the CIA that appears to have played the key role in the controversy, and may even be responsible for the Government's conduct in UFO investigations throughout the years."

—*Philip J. Klass*

Philip J. Klass is the chairman of CSICOP's UFO Subcommittee and author of UFOs Explained.

Psychic surgery cuts a new figure

Psychic surgery made a bid to fix its tarnished image last November 26 in a scientific test at Oakland University in Rochester, Michigan. Contradicting the old finding that psychic surgeons make fake incisions from which they "extract" pig kidneys or chicken livers by sleight of hand, the tissues and blood from Philippine surgeon Juan Blanche's operations at Oakland were shown by laboratory analysis to belong to the correct human subjects.

The rational explanation for the new medical miracle, according to Richard Kammann, psychologist at the University of Otago in New Zealand, is that Blanche made real, if minor, cuts

into the skin of three subjects. Kammann, a Fellow of CSICOP and coauthor, with David Marks, of the just-published *Psychology of the Psychic* (Prometheus Books, 1980), sat in a back-row seat of the TV studio, where he was directed to sit by Phillip Singer. The test was organized by Singer, a medical anthropologist on the Oakland faculty. Although Singer claimed he wanted an open and objective evaluation of psychic surgery, he cooled to inviting Kammann in as an observer after he received a list of Kammann's qualifications as a detector of psychic fraud. In fact, Kammann had to make a $50 "tax-free donation" to get in at all—*sans* camera, which Singer required him to leave at the door.

Since the incisions made by Blanche were real, and since Blanche actually removed a lipoma and two cysts, the "psychic" claim rests entirely on the fact that nobody saw Blanche or either of his two assistants from the Philippines use any kind of blade or sharp instrument. Instead, Blanche took the hand of a nearby observer, waved that person's finger, as if it contained a laser beam, at the skin of the subject, and the cut appeared instantly.

In two detailed reports to CSICOP, one dated November 27 and the other December 8, Kammann documents his reasons for believing the cuts were simply made by sleight of hand. The first two incisions were made suddenly, by the finger-flicking method, without explanation or warning by Blanche, so that all observers were taken by surprise. However, the two men—one a physician and one a magician—whose hands were used in the ritual both noted that Blanche removed his thumb from just over the cut at the crucial moment. Immediately after the second cut, Dr. Singer announced that it had been made "without mica chips or razor blades," although there was no way he could have known this.

Kammann's case for conjuring is well supported by the rigamarole occurring with the third incision. Just as Blanche began to work on the subject's wrist where a cyst was to be removed, Roy Kissell, the observing magician from Detroit, asked to inspect Blanche's hands. The Philippine surgeon immediately "lost his powers" and the show was stopped for prayers and Bible readings. Mrs. Fernandez, of Blanche's team, urged everybody to close their eyes to help Blanche recover.

After these delays, the closest observing physician was given a Bible and instructed to hold it open to a certain page and about 12 inches above the cyst with the wads of cotton around it. At Blanche's request, Kissell was moved back to a place where he could no longer see the surgeon's hands. Finally Blanche asked that the portable TV camera monitoring his hands be moved to the other end of the table—it was during this shift that the third incision finally appeared.

In the minutes following, while Blanche worked on the cyst, the subject yelled "ouch" three times and announced that he felt he had just been cut with a razor blade buried in the cotton; unfortunately, Singer did not immediately move to have this checked out. Later this subject reported that during the next two weeks the cut became painfully infected and had to be treated with antibiotic ointment. He felt it would leave a permanent scar.

Neither Kammann nor Kissell was notified when Singer set up a second test of Blanche's powers at Oakland University for December 2, five days later. Based on interviews with two of the observers there, it appears that Blanche tried two more operations.

In the first, he used a cotton wad soaked in burning alcohol as a mystic procedure to remove a sebaroid keratosis, or, as one person called it, "a fatty wart."

In the second case, with an overweight diabetic subject, Blanche may well have dusted off the classic routine of making an ersatz incision by making a fold in the skin with his hand. After a number of quick hand maneuvers, the surgeon spooned off some brown liquid into a bottle—it was later found to be sugar in water. Meanwhile, the "incision" disappeared as soon as Blanche mopped it up. The observers were apparently supposed to conclude that Blanche removed the sugar from inside the diabetic's body, but medical tests of the subject's blood-sugar level, before and after, gave exactly the same high readings; he was as hyperglycemic as ever.

The interesting point, Kammann noted, is that in none of Blanche's demonstrations was it necessary for the surgeon to finagle animal tissues or blood into the act. What Blanche accomplished—the removal of several small growths on the skin, or just under it—could have been done by any physician in his office just as quickly, except that doctors don't make their incisions by sleight of hand. Magician Kissell agrees completely with Kammann's conclusion that the November 26 tests are easily explained by conjuring techniques. The observing physicians did not believe they saw anything psychic either; whereas Singer has declined to announce his own opinion.

Copies of Kammann's reports can be obtained by writing to him at the Department of Psychology, University of Otago, Dunedin, New Zealand.

—*Mary Smiles*

Mary Smiles is a fifth-year medical student at the University of Otago.

The faith healer and the bacterium

"Faith Healer Stuns Scientists by Controlling Growth of Deadly Bacteria"—such was the large headline of an article in the tabloid *Star* (Oct. 23, 1979). The article claimed that "one of America's most respected faith healers... Dr. Olga Worrall of Baltimore, the widow of an English scientist" had demonstrated the ability to control the growth of dangerous bacteria by the laying on of hands while "amazed" scientists watched through "powerful electron microscopes."

This extraordinary feat was supposed to have been performed under "strictly" controlled conditions at the Lawrence Radiation Laboratory of the University of California, Berkeley. A number of identified scientists, among them "Professor Elizabeth Rauscher, a physicist of the Nuclear Division" of the famed laboratory, are quoted as testifying to the accuracy of these claims and professing amazement at the results obtained in these experiments.

One of the experiments involved the handling of a sealed container of a *Salmonella typhimurium* (a common pathogen associated with food poisoning) culture that had already been treated with a chemical that "normally kills the bacteria within two minutes." It was claimed that before the test more than 30 experiments had been performed "to confirm the death rate and time." According to Professor Rauscher, 15 percent of the bacteria handled by the faith healer were still alive after 12 minutes, while the control cultures, which were not touched, "died within the predicted two minutes."

In another experiment Dr. Worrall was given "a test tube containing salmonella bacteria in a growth solution." She concentrated on this for about a minute and, according to Dr. Rauscher, 24 hours later the salmonella in the test tube "had grown 15 percent more than the control samples. The difference was dramatic."

Since this writer was for many years associated with the University of

California, Berkeley, and its Lawrence Radiation Laboratory (since renamed the Lawrence Berkeley Laboratory), it was a straightforward matter to enlist the help of his colleagues there in investigating the claims made in the article. Alas, the facts are quite prosaic: (1) No experiments like those described in the *Star* article have ever been performed at the Lawrence Berkeley Laboratory of the University of California. (2) There exists no record of any research staff or faculty member by the name of Elizabeth Rauscher, and no one by that name has had any connection with the Lawrence Berkeley Laboratory. Furthermore, the University of California, Berkeley, has a number of eminent microbiological specialists and laboratories. It would make little sense to choose the Lawrence Berkeley Laboratory, a physical-science-oriented institution, to assist or sponsor a series of bacteriological experiments under the control of a presumed nuclear physicist.

It now becomes likely that sometime in the future, in another article, an essay, a book, a talk, or on radio or television, or both, reference will be made to the contents of this *Star* article, citing impressive testimony by authorities to sustain credibility. Thus another unverified and unverifiable phenomenon will have been added to the folklore of the paranormal.

—*Elie A. Shneour*

Elie A. Shneour, a biochemist, is director of the Biosystems Research Institute in La Jolla, California. He is a scientific consultant to the CSICOP.

A Scientology "dirty tricks" campaign against CSICOP

A Church of Scientology document has come to light that singles out the Committee for the Scientific Investigation of Claims of the Paranormal as the target of a Scientology program. The document outlines a plan "to handle terminatedly" the Committee and its journal "so that they never attack Scientology or Dianetics again."

It proposes a series of actions, including the forging of letters, the spreading of false rumors, infiltration, and efforts to link the Committee in the public mind with the CIA.

The document was discovered by John Marshall, a reporter for the *Toronto Globe and Mail*, among thousands of Scientology documents now on record in District Court in Washington, D.C., as a result of the government's investigation of illegal Scientology activities. Marshall brought the document to New York, where it was examined by the Executive Council of the CSICOP at its annual meeting on December 15, 1979.

The six-page document, which includes four suggested sample letters to be sent out to discredit the Committee, is labeled "Guardian Programme Order" and dated March 24, 1977. According to Marshall, who has conducted an investigation of Scientology tactics, the Guardians are, among other things, the Church of Scientology's "dirty tricks" operations arm.

The document, marked "Confidential," outlines an effort it terms "Programme Humanist Humiliation." The first paragraph states, under "Major Target": "To handle terminatedly the Humanist publication "Zetetic" and the Committee for Scientific Investigation of Claims of the Paranormal so that they never attack Scientology or Dianetics again." (Although the Committee is now an independent nonprofit organization, it was originally sponsored by the American Humanist Association. The name of the journal was changed from "The Zetetic" to the SKEPTICAL INQUIRER in early 1978.)

The Scientology document outlines 23 separate steps to discredit the Committee, under the heading "Operat-

ing Targets." Here are a few of them verbatim:

> 1. Forge a letter on CIA stationary along the lines of sample letter No. 1 attached. Include a date which is realistic. [The sample letter No. 1 attached to the document was a suggested text of a bogus "CIA memo" approvingly describing the Committee and its aims.]
>
> 2. Copies of this letter should be mailed, untracably, to some anti-CIA terminals including one or two media people. It should not be a broad mail, but should be sent to a selected few terminals who will act.
>
> 3. A suitable cover letter should be mocked up explaining the memo to the filer. This should state that the Committee is CIA sponsored and the whole idea is to discredit any and all psychic phenomena in order to keep this subject under CIA control.
>
> 4. The cover letter can mention the activities in Stanford regarding research on psychic phenomena.
>
> 5. Push the spreading the rumor to get the idea spread that the Committee was (has) set up by CIA in order to squash paranormal research outside CIA and that the Committee is a CIA front group.

Many of the other 23 "Operating Targets" discuss ways to portray the Committee as anti-religious to thus get it into a conflict with organized religion. Here, too, suggested tactics included fake letters to be leaked to religious leaders and the media, fake replies to the fake letters, and the spreading of rumors. Among the claims to be made in these untraceable letters was that the humanists backed deprogramming of all religions.

The document states, "Security must be maintained so there is no come back" (no way to connect these activities to the Church of Scientiology).

At the Committee's December 15 meeting, at the Biltmore Hotel in New York City, Chairman Paul Kurtz, of the State University of New York at Buffalo, suggested that the Scientologists' campaign probably was a response to several critical articles about Scientology in years past. The first issue of the *Zetetic* (Fall-Winter 1976) carried an article on Dianetics and Scientology by sociologist Roy Wallis. In 1974, the *Humanist*, which Kurtz until recently edited, published a strong attack on the Scientology movement by British psychologist Chris Evans. Evans, who later became a founding member of CSICOP, also published a detailed critical analysis of Scientology in his book *Cults of Unreason*. Also, several Committee members have written articles critical of the quality of paranormal research at SRI International (formerly the Stanford Research Institute), which has numerous Scientologists on its staff.

The Scientology movement has been noted for its aggressive attacks in reaction to criticism, but journalist Marshall, who has long been following its activities, said even he was shocked by the level of tactics revealed in the documents he examined in the court files in Washington.

Apparently, several of the actions against CSICOP proposed in the 1977 Scientology document were in fact carried out. Additional Scientology documents found in the court files in January of this year and brought to CSICOP's attention were compliance reports. They state that a letter about CSICOP was forged on CIA stationary, as suggested, and that copies of it were mailed to several prominent persons, including columnist Jack Anderson.

Kurtz says that documents attempting to defame the Committee were circulated surreptitiously to the media and others in 1977, but their origin was never determined. In October 1979 a bogus letter purporting to be from the Committee was circulated anonymously to members of the Parapsychological Association and to some members of the press (see following story),

but its originator is uncertain. Two attacks on the Committee, attempting to imply it is a CIA front or a Communist front appeared in print in 1979, one in a book and one in a magazine article (see Fall 1979 *SI*, pp. 7 and 40), but again no evidence of a connection to the Scientology document was known. In at least one of these documents the Committee was accused of being a "Soviet-front organization." The Scientology documents now in the court files in Washington are those confiscated by the government in mid-1977. Ten members of the Church of Scientology were convicted and sentenced to prison in a recent trial in Washington, D.C.

—*K.F.*

CSICOP annual meeting

At the December 15 meeting of the Executive Council of the CSICOP, it was decided that the Committee will establish a speakers bureau to assist organizations in arranging lectures by members and associates. Interested organizations should contact the Committee headquarters in Buffalo.

Michael Hutchinson, secretary of the United Kingdom section of CSICOP, gave a report on activities of that group and briefly discussed the problem of a successor to U.K. section chairman Chris Evans, who died last October. The New Zealand section was represented by Prof. Richard Kammann. Both the U.K. and Canadian sections were commended for their efforts. The organization of sections in Mexico, Ecuador, and Holland was discussed.

Steps to establish a Questionable Medical Claims Subcommittee were given a go-ahead, despite some stated reservations about proliferating subcommittees. A written proposal by a nonmember to establish a "Bigfoot" subcommittee was considered and rejected.

The Committee reaffirmed its policy of accepting paid advertising in the SKEPTICAL INQUIRER. There will be no censorship of claims made in ads; ads will be accepted without regard to content. The journal will, however, consider it its right and responsibility to comment on and analyze any claims made in ads it prints.

Following a discussion of the problems that can be caused by Committee members speaking out forcefully on controversial claims and issues, Chairman Paul Kurtz was asked to send a note cautioning all persons associated with the Committee against implying that their statements are made on behalf of the Committee unless that, in fact, is so.

The afternoon session of the meeting was devoted to a wide-ranging three-and-a-half-hour discussion of the status and visibility of paranormal claims, the problems and issues in critically analyzing them from a scientific point of view, and the difficulty and necessity of getting reliable information on them to the public. Attending were Martin Gardner, Ray Hyman, Philip J. Klass, Paul Kurtz, James Randi, Ken Frazier, Lee Nisbet, Michael Hutchinson, Isaac Asimov, John R. Cole, Richard Kammann, and Gary Posner, and also reporters from the Associated Press, *Omni*, the *Toronto Globe and Mail*, and the *Times* of London. There have been several national press accounts of the meeting. It was emphasized again that among the Committee's goals are to encourage scientific investigation and to engage in public education.

—*K.F.*

A hoax letter

Hoaxes are hardly unknown in the field of the paranormal. This time the Committee for the Scientific Investigation of

Claims of the Paranormal was the intended victim.

Copies of a bogus letter ostensibly from CSICOP Chairman Paul Kurtz were mailed anonymously to members of the Parapsychological Association and to news reporters in late October and early November of 1979. The letter made a number of untrue statements about Committee goals and activities. The apparent intention was to discredit the Committee, in part by falsely implying it was actively working to have the Parapsychological Association expelled from the American Association for the Advancement of Science. The letter was crudely done, and when Howard M. Zimmerman, executive secretary of the PA, received a copy, he notified Kurtz, who immediately confirmed Zimmerman's suspicions that the letter was a hoax.

The following brief statement was then prepared by the Committee and, with the cooperation of the Parapsychological Association, mailed to all members of the PA in November:

> Dear Members of the Parapsychological Association:
>
> We were shocked and dismayed to receive a copy of a recent bogus letter dated September 5, 1979, allegedly from the chairman of CSICOP and apparently distributed to members of your association. We wish to assure you that this was a crude forgery and that its contents are fabricated and untruthful.
>
> We have no intention of requesting the "expulsion" of the Parapsychological Association from the AAAS and would be opposed to such a move. The so-called "Inner Committee" is pure fantasy. Although many of the undersigned have been and will continue to be strong critics of various kinds of research that has been done by parapsychologists and others in other areas, we are committed to objective scientific inquiry. We support all serious efforts dedicated to that purpose.

The letter was signed by Paul Kurtz, Kendrick Frazier, Martin Gardner, Ray Hyman, Philip J. Klass, Lee Nisbet, James Randi, and Marvin Zimmerman.

—K. F.

On Chris Evans

If one classifies scientists into scholars and ideas people, Chris Evans, who died October 10, 1979, was an ideas man. Enthusiastic, energetic, amazingly lively, he spoke twice as fast as other people did, in a rush to get his ideas out.

I first met Chris at J. B. Rhine's parapsychology laboratory at Duke University in 1960. At Rhine's invitation, he was spending his mornings directing his thoughts at paramecia, to see whether he could make the creatures move into one quadrant of the microscope slide. In anyone else this would have been an alarming sign of descent toward credulity and superstition. But Chris, for all his open-minded enthusiasm, receptive to any kind of new idea, still had his feet firmly planted in reality. That summer at Duke was a crucial experience; he quickly saw through Rhine and understood the blend of showmanship and token scholarship that the laboratory was purveying under the banner of the new science of parapsychology.

From that date until his death he devoted a good part of his energy to countering the impact of the salesmen of superstition in Britain. In books, in the press, and on television and radio his voice was constantly heard, playing the role of a commentator but pointing out gently, humorously, convincingly, how easily we were hoodwinked, how weak was the evidence for the paranormal, how much more—incomparably more—sheer hard work and sustained clear thinking has gone into the building of mainstream scientific knowledge and

how absurd it would be to abandon this solid edifice in response to scattered reports of unexplained observations and unidentified objects.

Chris's charm and enthusiasm, his professional competence as a media man, and his tough, skeptical common sense made a rare combination. He will be sadly missed.

—*Christopher Scott*

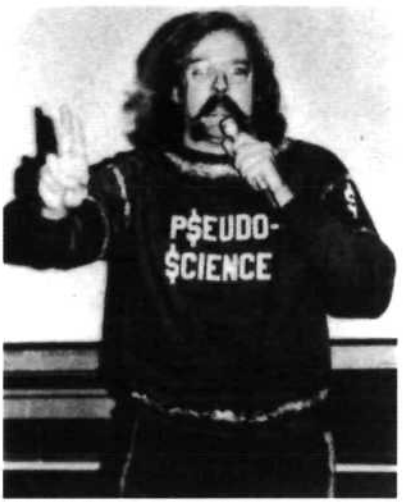
Captain Light Ray and his satirical anti-pseudosci show

When straight, factual criticism of pseudoscience falls flat, maybe it's time to turn to comedy, satire, and showmanship.

That's the principle Douglas E. Stalker goes by. Stalker, otherwise known as "Captain Ray of Light," is an associate professor of philosophy at the University of Delaware. For the past year he has been taking his "Winning Through Pseudo-Science" comedy act to college campuses, all with the hope of providing both entertainment and a little enlightenment.

"I started the show—not lecture, please—back in February of 1979," says Stalker. "It grew out of a popular, not to mention satirical, paper that my colleague Clark Glymour and I wrote ... The show is based on points and jokes made in that paper, but it goes far beyond it. It includes a stand-up comedy routine, a demonstration of my psychic powers, and a variety of other high jinks. Of course the more serious points come when I divulge the fundamental principles of pseudoscience construction and use them to build some new and positively outrageous pseudosciences."

Stalker's show has played from Chicago to Boston, with stops in between at South Bend and Pittsburgh. This past February he played in Virginia, upstate New York, and North Carolina. To get bookings, he's been



Stalker stalks pseudoscience.

sending flyers and letters to college philosophy departments. He performs in full costume and, he says, "at bargain rates." He's hopeful of spreading the word wider and eventually getting a national television booking.

Stalker says his show is "a comical bit of debunking that I do as a public talk, or, more accurately put, as a performance." It is directed at astrology, biorhythms, numerology, UFOs, pyramid power, psychic claims, and the like.

"For years I lectured against them in a serious way, with direct charges at their silly theories. These direct attacks didn't change many minds, and so I decided to take an indirect approach. If you can't beat them, join them. And so I did, in a manner of speaking. I constructed some plainly preposterous pseudosciences of my own and showed that they were just like astrology and the others. I also explained how you could construct more of these silly theories. By working from the inside out, more students came to see how pseudo these pseudosciences are."

Stalker, who teaches a course at the university called "Clear Thinking," says the general theme of his public perfor-

mances is that "lots of people are making a ton of money through pseudoscience, and I will show you how to exploit this fuzzy thinking and its true believers." He says the act has done well in the Midwest, and he's now ready to take it to most any campus. "It makes for a good evening of entertainment with a good point behind it as well."

"The show reaches the right audience, and in the right way," says Stalker. "Readers of the SKEPTICAL INQUIRER are, by and large, steadfastly against pseudoscience. They don't need any more convincing, while college students do. And that is the audience I try to reach: the upcoming group of citizens. My show reaches them in the right way, too. It leaves a lasting impression; it wins friends and changes minds."

Stalker hopes those sympathetic to his goals can help spread the word. He welcomes new bookings. For further information contact him at: Department of Philosophy, University of Delaware, Newark, Delaware 19711.

—*K.F.*

TV: One forward, two back

All inside of one week in November the New York area was treated to three examples of television journalism that should be of interest to students of the media. On CBS, Dorothy Allison was given credit for finding the body of a murder victim. Further investigation showed she had nothing to do with it at all. Allison is the much-touted "psychic" who is said to assist the police in finding lost persons. Her technique is the usual flood-'em-with-guesses method, in which the police are asked to recall that she once, in the weeks preceding, mentioned something that might suggest the most recent find, all the other details being forgotten by mutual agreement. Interestingly enough, no other TV station even mentioned Allison in connection with the case.

This came just as CBS was featuring an exposé of astrology by John Stossel, its consumer reporter. Titled "Astrology: Your Future or Theirs?" it ran for two nights, and it was devastating. The reporter cast horoscopes for 29 students at an adult school and received approval from all 29 enthusiastic recipients. They lost their enthusiasm when told that all horoscopes were identical and belonged to a mass murderer. This one was cast by a prominent professional astrologer.

Stossel's investigation also revealed that one well-known astrologer in New York was sending some of her victims to a local chiropractor to be cured of cancer. He has a pill, she claims, that cures cancer. We wonder if anything was ever done to follow up this matter from a legal standpoint.

Then NBC, in its perpetual pursuit of the irrational and the juvenile, reported on the "Today" show (and repeated it that night on the NBC network news) that Bill Lucas, of Georgia, had invented a "perpetual motion machine" that develops 4,000 watts of electricity with which he powers his home. It turned out to be the same old sliding-weight-and-levers claptrap that has been fooling people for decades. But, said NBC, "it works," and it extolled such men as Edison and Fulton, comparing them with Lucas. "This country was built by men like Lucas," gushed NBC, failing to add that in the past, others with the same silly machines had taken millions from unsuspecting investors.

—*J.R.*

Prediction, yes. Psychic, no!

A New London, New Hampshire, man predicted in writing in December 1978 that 46 people would be killed in a major plane crash on March 11, 1979, outside a major population center in the

Northern Hemisphere, and that the airline's logo would have red in it.

A Royal Jordanian plane crashed outside Doha, the capital city of Qatar, on the Persian Gulf on March 14, 1979. The death toll was 45. The airline's logo was maroon.

An astonishing case of precognition? A dramatic example of psychic abilities? Hardly.

Richard Newton, a student at the University of Massachusetts, Amherst, made the prediction not by psychic means but by analysis of statistics. It is contained in his thesis, "Sense and Non-Sense," which deals with the ways persons misleadingly convince others and even themselves that they have psychic abilities.

Newton made his prediction by taking the available data for the past 26 years and finding a statistical average that would tell when such a plane crash was most likely to take place. He found that March was the second most likely month for air crashes (after December), and he took the average number of deaths associated with crashes in that month. Fifty percent of all airline logos have red in them, so that was a good bet; and since most flights are in the Northern Hemisphere, he wasn't likely to go astray there either.

His "successful prediction" demonstrates, he believes, how supposed psychic predictions often come about. In the case of well-publicized incidents like air crashes, the information that goes into a prediction is readily available. It is possible for the brain to gather information subliminally and to use the data to make a forecast. Often this process occurs without the person even being aware of it. People who honestly believe themselves to be psychic are, by and large, unaware of gathering the data and of the thought process involved, Newton says. He points to studies of claimed psychics in which "psychic" powers suddenly fail when sensory cues or other feedback of information is cut off, such as when the "psychic" is no longer able to touch or listen to the person being given a "cold reading." Often neither party is aware of how much information is being conveyed by the subject's involuntary responses.

Newton says more people should be aware of these matters. "Overinterpretation and voluntary or involuntary application of otherwise available information certainly aren't as 'mysterious' as ESP," he told the SKEPTICAL INQUIRER, "but they are more natural."

—*K.F.*

A subversive doctrine

I wish to propose for the reader's favourable consideration a doctrine which may, I fear, appear wildly paradoxical and subversive. The doctrine in question is this: that it is undesirable to believe a proposition when there is no ground whatever for supposing it true. I must, of course, admit that if such an opinion became common it would completely transform our social life and our political system; since both are at present faultless, this must weigh against it. I am also aware (what is more serious) that it would tend to diminish the incomes of clairvoyants, bookmakers, bishops and others who live on the irrational hopes of those who have done nothing to deserve good fortune here or hereafter. In spite of these grave arguments, I maintain that a case can be made out for my paradox, and I shall try to set it forth.

—Bertrand Russell, *Sceptical Essays*

Psychic Vibrations

A few issues back, we reported how the pro-UFO regime of Sir Eric Gairy in Grenada (which had been ceaselessly striving to get the U.N. involved in UFO investigations) was overthrown by a coup in March 1979. We then noted that the mantle of government UFO advocacy had apparently passed to a tiny African nation, the Republic of Equatorial Guinea, which had also recently issued a UFO postage stamp bearing the utterly discredited George Adamski "chicken-brooder UFO" photograph, under the banner "Colaboracion Interplanetaria." Well, it seems that just a few short months after we went to press, the Nguema regime in Equatorial Guinea was likewise toppled in a coup. Thus every regime that has issued postage stamps bearing the likeness of Adamski's saucer has been toppled in a coup just months afterwards. Where will the Curse of the Venusians strike next?

* * * * *

Dr. Cyrus Lee, a professor of psychology at Edinboro (Pennsylvania) State College, was quoted by the *National Enquirer* giving the startling results of his recent psychic investigations behind the Bamboo Curtain. Chinese mystic priests, called Gan Hsi Di, Lee says, "can actually make dead bodies walk." "It is a terrifying experience—seeing dead corpses jumping, hopping, and walking along the roadside with psychic priests whispering secret incantations and gesturing with symbolic paraphernalia. I was so scared that I didn't dare go out," he reported. The chief use for corpse re-animation is said to be when someone dies in a rugged mountain region and must be brought back for burial in the family's ancestral burial ground. "For a fee, the Gan Hsi Di will get a corpse to walk back even from a difficult mountain area. The corpses look like they are jumping or hopping. It's so common people don't get upset about it."

* * * * *

With all of the recent turmoil in the oil-rich Middle East, it is reassuring to see that one of the most important men of the region—Saudi Arabia's Oil Minister, Sheik Ahmed Zaki Yamani—bases his ever so important policy decisions upon a firm and rational foundation—astrology. The Washington Post News Service reports that Sheik Yamani "never makes a major decision without consulting his charts." Yamani says, "I am a Cancer with a Leo ascendant and a Leo moon. If you see my chart you'd be amazed. It's unique. Excellent aspects." The United States is a Cancer country,

he notes (i.e., a July 4 birthday). This is good news, because "Saudi Arabia is a Virgo almost on the cusp of Libra," Sheik Yamani explains, and Cancer and Virgo get along very well, except that "Virgo is very critical of Cancer." Thank your lucky stars that our Founding Fathers had enough sense to have this country born a Cancer instead of a Gemini!

* * * * *

Psychic peeks at past lives are now so commonplace that the entire subject has become humdrum. The narratives of Roman gladiators and Egyptian princesses are now a dime a dozen. But the *National Enquirer* reports that veteran actor Bob Cummings, cooperating with hypnotist Dr. John Kappas, has pioneered a dramatically new and exciting area of psychic research: *future lives.* Instead of being regressed under hypnosis, Cummings was "progressed" one hundred years, when he was (or will be) living in China, teaching Chinese history. "I am 6 feet 6," Cummings said while in his "trance." "This is now the average" (for the Chinese?). The average man now lives to the age of 150, he explained, and the average woman, 160. "I firmly believe his answers came from deep within him, and from 100 years into tomorrow," Dr. Kappas stated. We would like Dr. Kappas to let us know when we can hear from a twenty-first century stockbroker who can summarize for us the major ups and downs of the market from, say, 1980 to 2000. Purely academic interest, of course.

* * * * *

As the 1980 presidential election campaign has been heating up, we've been giving each of the candidates most careful scrutiny. None of them seems to have as much to recommend them as Donald Badgley, the 60-year-old spiritualist who is seeking the Republican presidential nod. Badgley's campaign symbol (and probably his platform as well) is his long cane with 74 notches, as well as his long flowing hair and biblical beard. According to the Associated Press, Badgley has already selected as his running mate Shirley Temple Black, who has not yet been informed of her selection. (Her name "came to me on a walk," he explained.) His long hair, he says, gives him an advantage over the other contenders. "I think hair has little holes in it which stimulate the mind. Women have more hair than men, and that's one reason women have more intuition."

* * * * *

As if the dangers of the dreaded Bermuda Triangle did not pose sufficient peril to travelers, the sinister forces that lurk behind that region seem to be spreading out. A few years back, the Great Lakes Triangle was discovered by Jay Gourley, the Washington writer who achieved national prominence by picking through Henry Kissinger's garbage. Then the supermarket tabloid *Star* revealed the deadly "Tennessee Triangle," located near Knoxville and the North Carolina state line, which has "claimed 11 lives in the last two months." Soon afterward, the *National Enquirer,* not to be outdone, countered with "Kentucky's Baffling Bluegrass Triangle," several hundred miles away, which is reportedly the site of a "UFO blitz." The *Star* upped the ante by conjuring up an "Ecuador Triangle," where commercial airliners are said to be "vanishing into thin air over the Andes mountains." Meanwhile, the *International UFO Reporter* relates that the Italian press has been trumpeting an "Adriatic Triangle," where submerged UFOs have reportedly been sighted. At this rate, the most remarkable places on earth will soon be those few remaining

spots that are *not* claimed as part of any dreaded triangle!

* * * * *

In late November, with apprehensions rising over the fifty American hostages in Teheran, UFO-lecturer Stanton Friedman turned psychic to predict that far more apocalyptic events are in store. According to the November 25, 1979, issue of the *Oakland* (Calif.) *Tribune*, Friedman is certain that before the end of the century a single event will precipitate the following: National governments will begin to collapse, the world's stock markets will plunge, admissions to mental hospitals will soar, and most people will quit work on the spot. In short, Friedman was quoted as saying: "all hell will break loose."

And what will precipitate this apocalypse? The landing of a flying saucer and its viewing by the world's population via global television, according to Friedman.

This prediction sounds strange coming from a man who earns a comfortable living by giving lectures entitled "UFOs *Are* Real!" especially since Friedman has been publicly quoted as saying that he suspects that the U.S. government has already captured one or more flying saucers but has managed to keep this fact secret for many decades.

But the flying-saucer landing that Friedman predicts presumably will occur in a more hospitable, less secretive country. And the impact will also have some benevolent effects, according to the UFO lecturer. Friedman predicts that as a result Congress will be pressured to "blow the lid off this Cosmic Watergate," pressure will be applied to the news media to tell the "true story" of UFOs, and the U.S. government will be forced to admit that earth-based aircraft have been "zapped" by UFOs and that the Defense Department is "powerless" to defend us against the extraterrestrial visitors. This, Friedman believes, will ultimately result in a single world government for planet Earth.

Friedman, convinced that this formal landing will occur before the end of the century, explains that "the space shuttle will be flying regularly by then, and this will bring the UFOs." As a matter of fact, the space shuttle ought to be flying regularly by the mid-1980s, so the earth-shaking event could occur within the coming decade, if Friedman is correct.

Perhaps Friedman's view of the impact of the first formal landing of a flying saucer is influenced by its apocalyptic impact on what has been his means of livelihood for the past decade. When the majority of the earth's people have seen with their own eyes an honest-to-goodness flying saucer and the UFO-nauts that fly them, who will be willing to pay Friedman $1,000 for his lecture "UFOs *Are* Real!"?

At that point, Friedman will become one of many unemployed UFO lecturers. And, having abandoned nuclear physics a decade ago, he may by then have become too rusty to return to his original profession. But Friedman, whose membership in Mensa indicates he has a high I.Q., surely can adapt his colorful lectures to new subject matter. Perhaps: "Leprechauns *Are* Real!" Or "The Great Blarney Coverup!" •

Believing in ESP: Effects of Dehoaxing

Scot Morris

I believed in ESP. I was a teenager and had read one of those "Incredible Tales" paperbacks, and I believed. A patient teacher pointed out the fallacies and flimsy evidence on which I was basing this belief, and I began to wonder. Then there was a newspaper story about a poltergeist—very exciting and mysterious. I believed, and tried to convince others, until two weeks later when I read in a follow-up story that the boy confessed to fooling his parents and the investigators "for a little excitement."

The experience was embarrassing, but it taught me a valuable lesson—that I could be fooled. I was determined not to be fooled again. I am convinced that the best way to develop a healthy skepticism toward the many incredible tales one hears in life is not to go about disbelieving everything blindly, but first to *believe*, with all one's heart, and then suddenly and dramatically be disabused of the idea. The lesson, like a pie in the face, is never forgotten.

In a lab session of Introductory Psychology that I taught at Southern Illinois University, part of the course curriculum was to teach students some principles of scientific method so that they could learn to evaluate any kind of evidence—"Incredible Tales" books, technical experiments, TV commercials, and personal experiences—and be able to see whether someone's conclusions are warranted or not.

In most classes there was a keen interest in ESP. The majority of students did not believe in it but were curious; a few had come to believe after studying about it or after an intense personal experience. But a surprising number believed in ESP because of an article in the Sunday supplement or an impressive stage telepathy act. This was discouraging. It seemed that students could be convinced so easily that they apparently made no effort to come up with counterexplanations. Many apparently found it easier to believe in ESP than to admit that they couldn't explain something or that they could be fooled. With the help of some fellow

Scot Morris, who holds a Ph.D. in clinical psychology, was formerly an editor of Psychology Today. *He is currently senior editor of* Omni.

psychology instructors, I worked out an exercise and lecture that I hoped would teach the students to be more critical and selective in deciding on all their beliefs—from the existence of ESP, to the validity of an experiment, to the efficiency of the latest commercial "miracle ingredient."

ESP in Front of Their Eyes

My colleague Steve Werk came to class as a visiting lecturer for the first hour of a lab session. I introduced him as an expert in ESP who had just returned from Duke University. He talked about the different forms of ESP, then went through a pack of Zener cards to see if anyone could score better than chance in guessing the symbols—star, circle, square, cross, and wavy lines. Steve then began an "ESP demonstration."

His first feat was to receive a number between 1 and 20 that the class had decided upon while he was out of the room. He then spoke of a friend with whom he had developed an especially strong ESP bond. His friend was at home, Steve said, but was expecting a long-distance telepathic communication sometime during the hour.

Steve had a student volunteer pick a card from a standard deck—the two of clubs, let us say. He then selected three volunteers—to assure there were no accomplices—and told them to go call his friend from the public phone. "Call 755-8472 and ask for Mr. Black," he said. "Tell him you are in the ESP experiment with me and ask what card we have selected. He'll know what you mean." Steve wrote the name and number on a slip of paper, gave them a dime, and they left the room. He asked for quiet, closed his eyes, and held his fingertips to his brow.

A few moments later the excited students returned: "*He got it! He got it! The two of clubs!*"

In the final demonstration Steve distributed a half-dozen sheets of paper, with envelopes, to six students in different parts of the room. "Write a question on the paper," he said, "a question about the future. Show your question to the people sitting near you so there can be no dishonesty." Each student then folded his paper, placed it in the envelope, and sealed it. I collected the six envelopes and gave them to Steve. He asked for silence, picked up the top envelope and pressed it against his forehead. He closed his eyes. "I see this is a question about sports. Yes... it's a question about basketball. Someone wants to know whether we will win the regional championship."

The student who had written that question let out a gasp. I asked him whether Steve's wording was correct; it was. The students looked at each other in amazement. Steve opened the envelope to verify the question and answered it: "Yes, we will win," he said, or "No, we won't," or whatever

came to his mind. Since the questions were about the future he was free to improvise.

After extemporizing about the basketball tournament, he held the second envelope to his forehead. "I see... it's a question about scholarship and... numbers," he said. "Someone wants to know: 'Will I keep my four-point average?'" Another student gasped.

At the end of the envelope demonstration the first lab hour was about over, so I thanked Steve and he left.

This was our ESP demonstration. In the next couple of years we became so fascinated with its effects that we repeated it to over a half-dozen different classes, and once to a Student Activity Club audience of about 150 persons.

Of course it was all a hoax. The demonstrations were well-known parlor tricks. In the first trick, I was the accomplice. My helpful "Ready now, Steve?" or "OK, are you ready?" was a code phrase that told him the number. In the long-distance telepathy feat the accomplice was another psychology instructor, Paul Fox. When he got a call for *Mr. Black*, he knew the card was the two of clubs. The first letter meant *two* (since *B* is the second letter of the alphabet), and the last letter, *k*, meant *clubs* (because *clubs* starts with a *k*-sound). Had the card been the four of diamonds, the students would have been told to ask for *Mr. David.* Steve and Paul, of course, had practiced the code in advance so that Steve could think up a plausible name within a few seconds of seeing any card in the deck.

In the last demonstration, one of the students in class was the accomplice. He wrote a prearranged question on his paper—for example, "Will we win the basketball tournament?" When I collected the envelopes, I made sure the accomplice's was on the bottom of the pile. Steve had no idea what was in the top envelope—until he read it while pretending to verify the wording of the basketball question. He noted the question, "Will I keep my four-point average?" and pretended to receive it from the second envelope.

The three parlor tricks were frighteningly impressive. During all our classroom demonstrations, no student ever doubted that he had seen real ESP—at least not out loud.

"I have something to tell you..."

I always dehoaxed the students during the next lab hour or the next class meeting. I would start by asking for a show of hands—how many now believed in ESP, or had their beliefs strengthened by Steve's demonstration? It was almost embarrassing. Usually about 80 percent raised their hands. I asked them to keep their hands up while I wrote some figures on

the board: A = ace, B = 2, C = 3, etc. It was the code for the telephone trick. I explained how the name *Black* had carried all the information our accomplice had needed to guess the two of clubs.

The students looked disappointed and embarrassed. Slowly, sheepishly, they began to lower their hands.

"Everything you saw in the demonstration was a hoax," I said. "You were fooled. Steve and the man who answered the phone are friends of mine who teach in other classes. Now, why did we—your friendly psychology instructors—do this to you? Because we wanted you to see how easy it is to believe something that's not true; how readily you will jump to a false conclusion when you want to believe it and can't think of any other explanation. The envelope demonstration was a trick too; but I'm not going to say how it was done, because I want you to experience the feeling that, even though you can't explain something, that doesn't make it supernatural. Why not just say, 'I don't know how it was done,' and leave it at that? We tricked you because we want you to think about the way you reach conclusions and the type of evidence you accept as proof of something."

I followed the dehoaxing with a skeptical lecture about ESP. It was admittedly one-sided, because I felt the students had already seen many pro-ESP accounts in popular magazines and paperbacks. I made the lecture as powerful and persuasive as possible, because it reflected my own beliefs at the time and because we later wanted to measure the effects of the lecture (and, separately, the dehoaxing experience and the ESP demonstration) on students' belief in ESP and other controversial issues.

The Lecture

There is room here only to sketch the outlines of the anti-ESP lecture. It lasted about 50 minutes and consisted of four major sections, the first three corresponding to the major types of "proof" people cite when explaining why they believe in ESP.

Stage ESP. I pointed out that ESP research has generally shown that if the phenomenon exists it is an elusive, long-run, slightly-above-chance sort of thing. No serious believer would dare to announce, "Ladies and gentlemen, I will now guess the next card correctly." In short, if it's done on stage or by appointment, there's a trick to it. Several secrets of professional mind-readers were revealed, including "cold reading," the artificially inflated "hit rate," use of accomplices and codes, safe predictions, researched predictions, self-fulfilling predictions, and the *post hoc* selection of events to "fit" previous predictions.

Personal experience. "My Aunt Gertie had a dream and it came true."

Perhaps. But is she remembering selectively, or embellishing the tale ever so slightly for the sake of a good story? And how many dreams didn't come true? Personal experiences, first- or second-hand, can be very persuasive, but they always beg the hidden question, "What is the probability of this coincidence happening by chance?" The question is often unanswerable in principle because of the vagaries of human perception, memory, and subconscious "editing," especially during stress. It would be wonderful if someone kept a record of all the failures—but imagine calling the features editor at the newspaper to report, "The dog next door started howling at 1:20 last night. Not much else happened—its master didn't die or anything—but I thought you ought to know."

Laboratory studies. This section examined pitfalls in some scientific research, including the tales of Clever Hans and Lady Wonder (a telepathic horse investigated by J. B. Rhine); the claims that ESP doesn't work well when experimental controls are tightened or in the presence of skeptics; publishers' and researchers' selectivity in reporting the most encouraging results; statistical problems with "the decline effect," "psi-missing," and the multiple reanalysis of random data until significant "above chance" patterns are found. Examples from C. E. M. Hansel's *ESP: A Scientific Approach* showed how classic "definitive" ESP studies could have been fudged, and, though this doesn't prove fraud was used, it does mean that such experiments should not be considered conclusive.

If ESP exists... Finally, I asked the class to assume that ESP does exist, and then to explain why, after so many years of research, it has not shown itself when it had the chance. One might expect the power to make more appearances in situations of strong motivation and emotion than in simple digit-guessing tasks. But, then, why do Las Vegas casinos continue to operate, year after year, always showing the expected amount of profit? When TV shows and magazines have offered cars and cash prizes to anyone who could receive a secret message, why has no one won? Does materialism inhibit the natural gift of ESP? Then, when Charles Lindbergh's baby was kidnapped and its whereabouts was a national obsession in 1932, why did none of the 1,300 dream reports solicited by the Harvard Psychology Clinic even come close to identifying the baby's true whereabouts?

In conclusion, I said, it is difficult to say definitely that ESP does or does not exist, but the "evidence," when examined very closely, does not turn out to be very compelling.

Measuring the Effects

The lecture above, along with the ESP demonstration and the dehoaxing

(telling the students they had been hoaxed and explaining why it was done) took about two hours of class time. Some warned that deceiving the students would only teach them to distrust the instructors and the rest of the introductory course. This didn't seem to happen. Several students began to ask for advice and opinions about other controversial issues; several previously quiet students showed new interest in the class and began to enter into discussions for the first time; and many volunteered that it was the most enjoyable, instructive lesson of the year.

But were our theatrics having any effect on students' beliefs? Before we took a second class through the experience, we constructed a questionnaire. To assess students' beliefs in ESP, we included statements about each of five types of ESP (telepathy, clairvoyance, precognition, psychokinesis, and predictive-telepathic dreams), and a sixth about ESP in general:

ESP Items

ESP exists. (ESP)

Some people, by telepathy, can tell what another person is thinking. (telepathy)

Some people's dreams enable them to know about unseen events or the future. (dreams)

Some people have mental powers such that they can be aware of events taking place at a distance from them. (clairvoyance)

Some people have mental powers enabling them to tell the future. (precognition)

Some people can influence the roll of dice by concentration. (psychokinesis)

(Note: Key words in parentheses are for reference in this paper and were not included in the questionnaire.)

The students were to rank the strength of their belief in each statement on an eight-point scale from *absolutely believe* (8) to *absolutely disbelieve* (1).

We wondered whether the exercise would teach the students skepticism for ESP statements only, or a more general attitude of skepticism, as we had hoped. For example, would their experience also make them more skeptical of astrology, Ouija boards, and ghosts?

We selected 15 more beliefs—supernatural, or at least "borderline-science"—and included statements about these in the questionnaire.

Supernatural Items

The star constellation under which a person is born can tell about his future and/or personality. (astrology)

Some UFOs (unidentified flying objects) are really flying saucers. (flying saucers)

Some mediums can get in contact with the spirits of dead people. (spiritualism)

Under hypnosis, people behave differently from the way they do in the normal state. (hypnotic state)

Human beings have souls. (souls)

There is a God. (God)

Some religious persons can cure people of illnesses to a degree not attributable to mere "power of suggestion." (faith healing)

The Ouija board has the power to give some people answers to questions they could not get otherwise. (Ouija boards)

Some people are able to tell colors by feeling them. (D.O.P.—dermo-optical perception)

Some people, by the use of a forked twig, can locate underground water. (dowsing)

It is possible to tell about a person's history or personality by the lines on his hands. (palmistry)

Horoscope books can tell about your future. (horoscopes)

Some people can tell about your personality by looking at your handwriting. (graphology)

Ghosts exist. (ghosts)

The menstrual cycle of females is related to the phases of the moon. (moon)

Finally, we wondered whether our trickery would have any effect on more neutral, natural beliefs, e.g., that man is descended from apes, or that smoking causes cancer. We wanted to include some "natural" items so that students wouldn't immediately interpret the questionnaire as a "survey of foolish beliefs." We included 11 statements about issues that are controversial but not supernatural:

Natural Items

Machines exist that measure electrical brain waves. (EEG)

Smoking causes lung cancer. (smoke—cancer)

Moths are attracted to light. (moths)

Scientists will find life on Mars. (Mars)

The only addicting effect of marijuana is psychological. (marijuana)

Some people are born unable to distinguish colors. (color-blindness)

Kennedy was shot by a lone assassin: Lee H. Oswald. (Kennedy)

Intelligence is at least partially determined by heredity. (intelligence)

Some animals can find their way in the dark by listening to echoes of their own voices. (animal sonar)

The pill is the most effective birth-control device. (the pill)

Man is descended from apes and lower animals. (evolution)

We called the questionnaire *A Survey of Controversial Issues*, and mixed the ESP, supernatural, and natural items throughout. We administered the survey to many different groups of students—sometimes once, usually twice or three times, with the testings counterbalanced to occur at various possible points in the sequence: sometimes before the ESP demonstration, sometimes after it, sometimes after the dehoaxing and/or the anti-ESP lecture. In this way, we could compare various groups or sets of groups to assess the separate effects of our manipulations. The data were analyzed by analyses of variance. The 6 ESP items were grouped for a single, average ESP belief for each subject; similarly, the 15 supernatural items yielded a supernatural-belief score, and the 11 natural items a natural-belief score for each subject.

The students took the questionnaire anonymously, but there was a space for listing sex and birthdate, and we used these data to match up the forms when questionnaires were given twice to the same class.

To determine the base rate of college students' beliefs independent of our meddling, we gave the survey to 200 Introductory Psychology students who did not take part in the other experiments (Fig. 1).

Students' belief in the natural items was highest of all, averaging 5.84 on the 8-point scale. There was significantly less belief in ESP (mean = 4.64), and still less belief in the supernatural items (mean = 3.89). This basic ordering of scores was obtained under almost every condition (usually significant with p k 0.01), though in some testings, especially just after the ESP lecture, ESP belief was elevated as high as natural belief. There were no significant sex differences.

We did not assess changes within subjects from before to after the demonstration, since we felt this would encourage spurious changes.

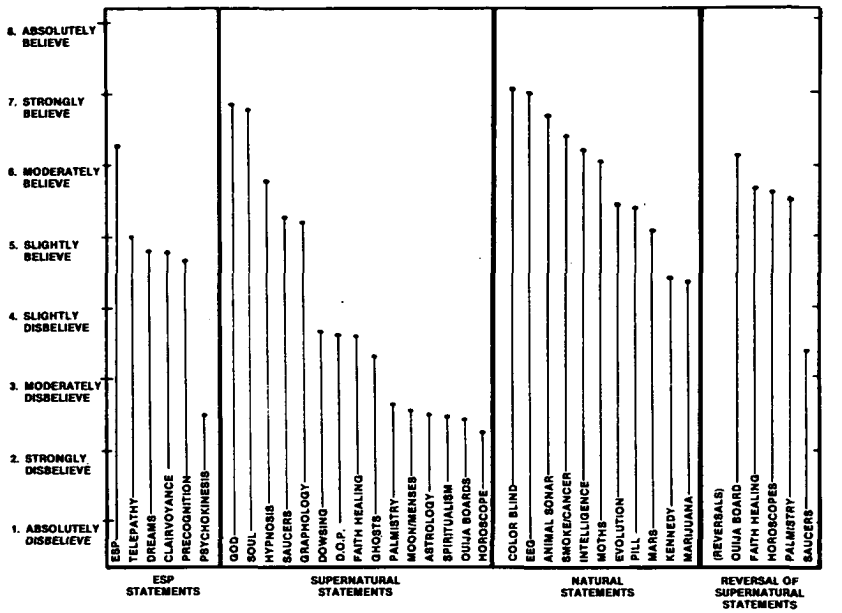


FIGURE 1: Beliefs. The mean beliefs of 200 college students on items on the Survey of Controversial Issues. Items are arranged within four categories in descending order of degree of belief.

Instead, we compared 55 students tested for the first time after seeing the ESP demonstration and found that they had a significantly higher belief in ESP than did a control group of 70 students who had not seen the demonstration ($p < 0.05$). The ESP demonstration had no significant effect on natural or supernatural beliefs. Further proof that the demonstration was effective came from a control group of 50 students who took the survey twice in two weeks, with no intervening manipulations. None of the belief-systems changed significantly during this period.

Generalization from one supernatural belief to others is not surprising; a person who believes in one paranormal phenomenon, such as ESP, tends to believe in others. In a group of 70 students participating in the survey for the first time, the correlation between ESP belief and supernatural belief was 0.58. Belief in ESP was also related to natural beliefs, though less strongly ($r = 0.25$). There was no relationship between supernatural and natural beliefs ($r = -0.05$).

Generalization. When we gave the survey to 39 students who had just seen Steve's impressive ESP demonstration, belief in ESP was elevated to an average of 5.72. After this testing I dehoaxed the students, presented the anti-ESP lecture, and then passed out the questionnaire again. Belief in

ESP had dropped to 2.6. Even though the lecture and dehoaxing dealt only with ESP, they were followed by a significant drop in supernatural belief as well, though this was not as dramatic as the drop in ESP belief. Natural beliefs did not change significantly.

These findings suggest a *generalization of skepticism*: teaching someone to be skeptical of one belief makes him somewhat more skeptical of similar beliefs, and perhaps slightly more skeptical of even dissimilar beliefs.

Memory. With one group we appended a few questions to the second version of the questionnaire (administered after the dehoaxing and the anti-ESP lecture), which asked students to recall how much they had believed in ESP on the *first* testing, taken just after the ESP demonstration. In other words, they were to recall the answers they had given to the ESP items just an hour before. On every question the students minimized the subjective change—they "pulled" their old ESP belief down toward their new level of disbelief, and assumed that their old level of belief in ESP was less than it actually was (Fig. 2). Later, we repeated this test twice on larger groups, and in both cases this *tempered recall effect* was significant ($p <$

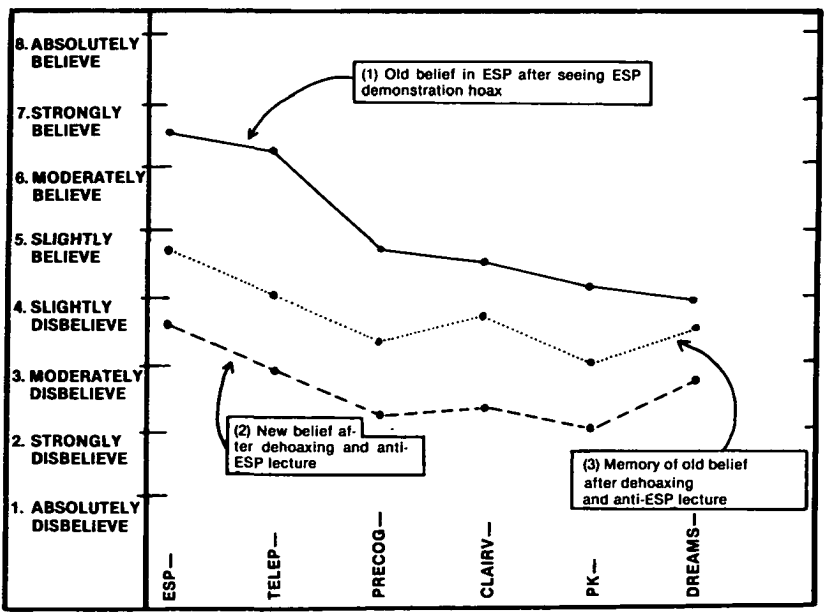


FIGURE 2: Tempered recall effect. Belief in six ESP statements (1) dropped considerably an hour later, after students were dehoaxed and heard a lecture critical of ESP. (2) On this second testing, students were asked to recall their earlier levels of belief. They consistently "pulled down" their old belief toward their new one, minimizing the subjective change. Data are presented in the order of descending degree of belief on the first testing.

0.01). In one study the old and new beliefs were 5.83 and 3.23, while memory of the old belief was 4.18; in another, the figures were, respectively, 5.39, 2.88, and 4.49. *The memory of one's old belief tends to split the difference between one's present belief and one's actual old belief.*

Reversals. The dehoaxing and anti-ESP lecture seemed to have a clear effect in making the students more skeptical of the propositions in the *Survey of Controversial Issues.* But were students becoming indiscriminately skeptical, disbelieving everything, no longer willing to take a positive stand, no matter what the issue? Would a student, for example, say that he didn't believe in flying saucers and also that he didn't believe in an opposite statement, that "flying saucers are all from earth"? To find out, we included toward the end of the questionnaire five statements that reversed earlier supernatural items:

Reversal Items

Belief in horoscopes is just a superstition. (anti-horoscopes)

It is impossible to tell about a person's history or personality by the patterns of lines on his hands. (anti-palmistry)

Belief in the Ouija board is a superstition. (anti-Ouija board)

Faith healing is just "power of suggestion." (anti-faith healing)

"Flying saucers" are all from earth. (anti-flying saucers)

We found that after the dehoaxing and the anti-ESP lecture, belief in these five reversal items rose instead of dropping. Apparently the students were not just checking the questionnaire blindly, disbelieving everything.

Separating the Effects. We had established that students became more skeptical of ESP and related beliefs after being dehoaxed and hearing the anti-ESP lecture; but which of these experiences was most important? Was it the hour-long attack on ESP by a psychology instructor or the simple realization that one had been fooled? We tried to separate these influences in our next experiment.

At an hour when two introductory labs, A and B, were in session, we arranged to have all students come into one room for Steve's ESP demonstration. Afterwards, all students answered the questionnaire.

The following week I went to Class A as a visiting lecturer and dehoaxed the students in the usual way—I told the students that they had been duped the previous week, explained how the telephone trick was done, and discussed the reasons for the hoax. I told them that Instructor B was at that moment explaining the hoax to his class, after which I would

talk about ESP to the combined classes. In fact, however, the instructor in Class B was going over quiz scores, stalling for a few moments while Class A was dehoaxed.

We then combined the classes, quickly and quietly, and I delivered the anti-ESP lecture. Everyone in the audience had seen the ESP demonstration, but only half of them had learned it was a hoax.

After the lecture, the students answered the questionnaire for the second time. I then explained about the previous week's hoax for the benefit of Class B, so that everyone left knowing the truth of the matter.

For Class B students, who did not know that the previous week's demonstration was a hoax, the anti-ESP lecture alone produced a significant drop in ESP beliefs of 1.66 points, with a slight generalization of

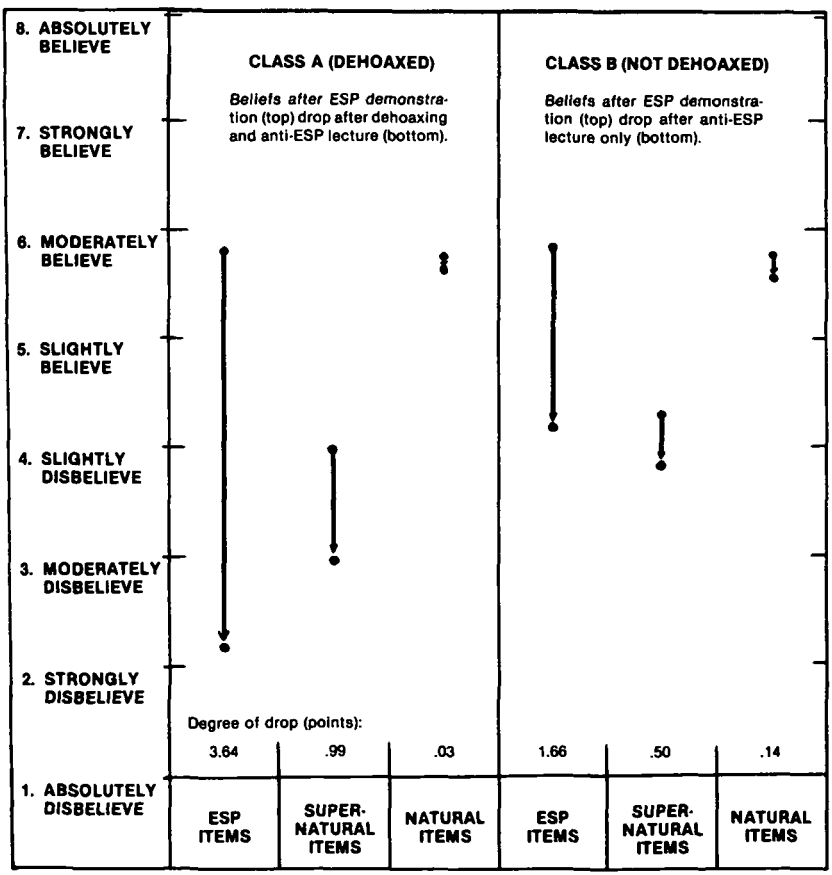


FIGURE 3: Effect of dehoaxing. Being told that one has been fooled is critical. In dehoaxed students, belief in ESP dropped 3.64 points. In students who were not dehoaxed, ESP belief dropped significantly less, only 1.66 points.

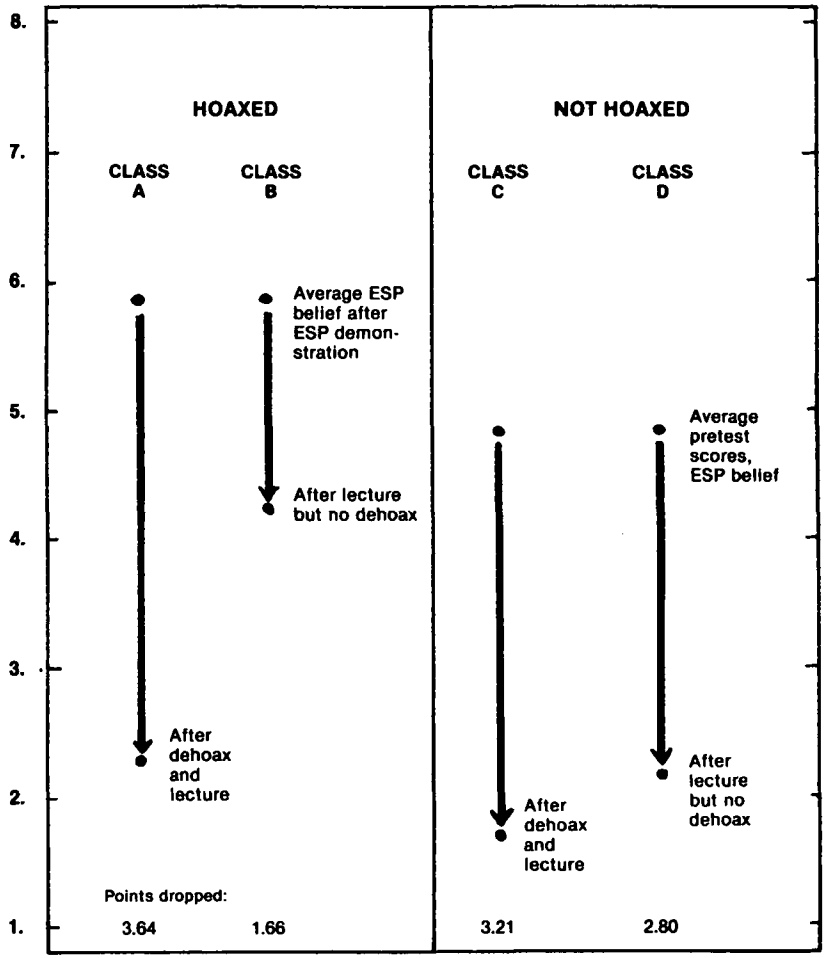


FIGURE 4: Effect of hoaxing. The greatest drop in ESP beliefs occurs after all three experiences—being hoaxed, then dehoaxed, and hearing an anti-ESP lecture. But final belief in ESP is slightly (but not significantly) lower in groups that have never experienced an ESP hoax.

skepticism to supernatural beliefs. Class A students, however, had a much more dramatic drop in ESP belief (3.64 points), as well as a greater generalization of skepticism (Fig. 3).

The dehoaxing experience was apparently crucial: a three-minute revelation that they had been fooled was more powerful than an hour-long denunciation of ESP in producing skepticism toward ESP.

Effect of Hoaxing. To measure the separate effects of the ESP demonstration alone, we repeated this experiment on two more classes, C and D, which also met simultaneously. But these classes never saw Steve's demon-

stration. The only time they took the survey was after the anti-ESP lecture. The difference was that Class D received the anti-ESP lecture alone, but Class C was "dehoaxed"—I told them how easily another class had been fooled—before the two classes were combined for the anti-ESP lecture.

In Class C students, there was a drop in ESP belief of 3.21 points, almost as great as in students who had been hoaxed.

In Class D students, the anti-ESP lecture alone produced a drop of 2.80 points in ESP belief (Fig. 4). This drop was significantly greater than the 1.66-point drop in Class B students who saw the ESP demonstration. This is understandable. Students in Class B saw the anti-ESP lecture as "equal time for the other side," but it was just an academic argument to them because they still thought they had seen real ESP the previous week.

The amount of "drop" in ESP belief was greater for the hoaxed students than for the nonhoaxed students. This was not terribly surprising, since in hoaxed students (Class A) the "drop" was measured from the inflated ESP belief taken just after the demonstration, whereas in nonhoaxed students (Class C) the "drop" was measured from the everyday pretest level. We did not find, as we had hoped, that the experience of knowing one has been duped produces more skepticism than one would have without the experience. The absolute levels of belief in ESP after it was all over were, in fact, slightly lower for the students who had not been duped, though the difference was not statistically significant. Our belief scale may not discriminate well at the low end. Also, there is the unanswered question of how long the effects last. We were unable to do follow-up studies. It may be that hoaxed students remember the lesson longer, but we don't know.

Anecdotal evidence suggests this may be the case, that nothing can quite undo the psychological effect of believing that one has seen ESP before his very eyes. E. J. Dingwall, a member of the Society for Psychical Research, in Britain, thinks everyone should go the route of first believing in something paranormal and then being disabused of it. He says that, as a young man, for three days he actually believed that one spirit medium had powers to communicate with the departed, and then he bothered to look under the table and found out how she was doing it. The revelation, he said, was so strong it lasted him for the rest of his life.

Our exercise that started as a lesson in scientific method aroused so many theoretical questions about the nature of belief that we indulged our curiosities for almost two years on several hundred Introductory Psychology students. Did they learn anything more than the fact that their instructor was a very curious fellow? Did they, the next time they saw a newspaper account of the paranormal, examine it with caution, reason, and determination not to be fooled again? I hope so. I sincerely hope so. •

Controlled UFO Hoax: Some Lessons

David I. Simpson

For many years it has been fashionable to argue a high probability that intelligent life has developed elsewhere in the universe (Shklovskii and Sagan 1966; Cameron 1963). The logic involved, however, suggests an extremely small likelihood that any such life would journey to Earth even once, with the probability of daily visits being negligible. According to the majority of those interested in unidentified flying object phenomena, this conclusion is at variance with the wealth of evidence indicating that our skies are often frequented by extraterrestrial visitors: the pilots of UFOs.

To resolve this apparent paradox, it is important to appreciate the abilities and motives of an enthusiastic group of people who make themselves responsible for investigating and reporting UFO sightings: the UFOlogists. Since Kenneth Arnold's sighting in 1947 (Arnold and Palmer 1952), when UFOs were first described as "flying saucers," the world has witnessed an ever growing number of UFOlogists, UFO "research" groups, and related magazines; there are at present approximately 250 such organizations throughout the world.

Starting in 1967 and examining in excess of 200 UFO reports from Britain, my investigations failed to discover a single case that could reasonably be argued to indicate anything more exotic than misidentified natural

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or man-made phenomena. A number of these reports contained insufficient data to reach a conclusion, a few were thought to be hoaxes, and a few more the result of mental illusions. The cases chosen ranged from simple lights in the sky, through UFOs that stopped cars, to photographic evidence and claims of alien contact. On examining the same cases, however, other UFO commentators usually published alarmingly different conclusions, often disregarding plausible but mundane explanations. Confronting these authors with alternative solutions provoked many accusations that I was a "nonbelieving skeptic with a closed mind."

It is sometimes difficult to convey to uninformed third parties the highly partisan nature of investigations undertaken by most UFO enthusiasts. I was therefore prompted to illustrate my opinions by perpetrating a series of controlled hoaxes. They were designed to attract the attention of UFOlogists directly, not the general public, with the aim of comparing known details of fabricated "UFO" stimuli with the issued statements of investigators. Since the experiments yielded broadly similar data, just one is detailed here.

* * * * *

Throughout the world there are certain locations famous for attracting the attention of UFOlogists; they have been called UFOcals. Cradle Hill near the Wiltshire town of Warminster is one such place; UFOlogists make pilgrimages there most weekends, and it was the setting for the opening scene of this experiment on Saturday, March 28, 1970.

At 11 P.M. a 12-volt high-intensity purple spotlamp was directed from a neighboring hill toward a group of about 30 sky-watchers on Cradle Hill, three-quarters of a mile away. The lamp was switched on for 5, and then 25, seconds, with a 5-second pause between. During the second "on" period, a bogus magnetic-field sensor, operated among the sky-watchers by a colleague, sounded its alarm buzzer, apparently indicating the presence of a strong magnetic field. (UFO folklore states that strong magnetic fields are a characteristic of UFOs, so this sensor was not an unusual sight.) In practice, the alarm was simply synchronized to sound while the distant spotlamp was on. The "strangeness" of the purple light was thereby enhanced.

Norman Foxwell (another colleague stationed among the sky-watchers) pretended to photograph the purple light with a camera mounted on a tripod. Part of his film had already been exposed, however, and bore two latent images, each showing part of the distinctive night view of the streetlamps observable from Cradle Hill with a spurious UFO superimposed. (See figure.) Neither photograph included the site of the spotlamp.

Frame one showed a cigar-profile UFO with a semicircular blob above and below center. With respect to the sky-watchers, it was approximately 22 degrees horizontally removed from the spotlamp site. Frame two showed the same UFO but farther removed by 8 degrees, slightly lower, fainter, and blurred. Shortly after the "sighting," Foxwell took two genuine time-exposure photographs so that the developed film would show a total of four relevant negatives, two with UFOs and two without, on successive frames. They were designed to present substantial inconsistencies that would allow any moderately critical investigator to cast strong suspicion on their authenticity. Not only did the first pair of negatives show a UFO image quite unlike the observed UFO and on a different part of the horizon, but their magnification was 10 percent greater than the genuine negatives on subsequent frames. Also, the faked negatives were prepared from originals taken the previous year, when two lamps from the distinctive streetlamp pattern were not working. Therefore, two streetlamps that appeared on the genuine pictures were missing from the adjacent faked ones.

Foxwell was briefed to give the film from his camera to any UFOlogist on the hill who would be prepared to have it developed privately. Surprisingly, he managed to do this without raising suspicion. The recipient was John E. Ben, who had connections with *Flying Saucer Review (FSR)*, a glossy international UFO magazine.

For two and a half years, the hoax nature of this "sighting" was kept secret, during which time UFOlogists' letters, published articles, and general comments were collected. To quote the entire file would require more space than is available here. I therefore refer to just a few items that may provide insight into the way UFO enthusiasts investigate and record UFO reports.

Ben was employed by the Wellcome Institute of the History of Medicine, and the film was developed in their photographic department. In early communications he sought permission from Foxwell to take the photographs to a meeting of the *FSR* consultative committee, adding that the top six men in Europe were fortuitously due to attend. After this meeting *FSR* wanted to examine the negatives in their laboratory. On May 26, Ben wrote to Foxwell: "Mr. Charles Bowen of *FSR* [the editor] has contacted me this morning to tell me about your Warminster photographs. I am pleased to inform you that they have now proven the negatives to be genuine beyond all doubt."

The Warminster photographs were first publicized by *FSR* in their July-August 1970 issue, with an artist's impression of the purple light on the front cover. Drawn by Terence Collins, who had been with the sky-watchers on Cradle Hill, the general details were correct, although with

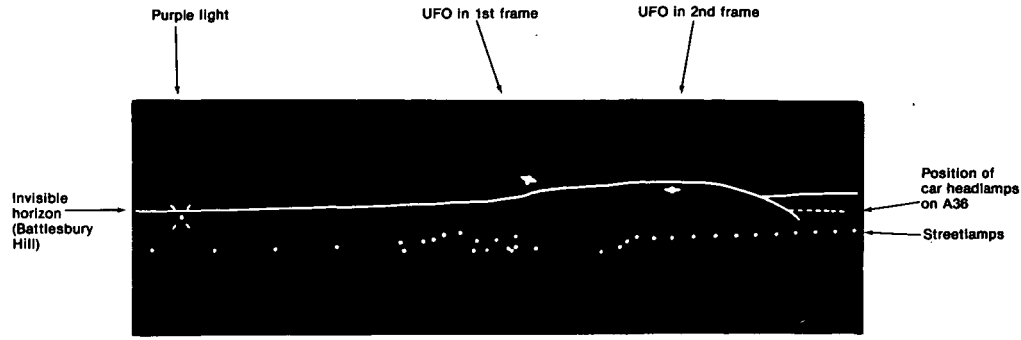

Diagram of view from Cradle Hill

respect to his streetlamps his purple light subtended an angular diameter roughly ten times too large. Inside the magazine, Ben's report, entitled "Photographs from Cradle Hill" (Ben 1970), described the stationary grounded light, which was visible for 30 seconds at an elevation of approximately zero degrees, in the following terms:

> At 11:02 P.M. an object was seen at an elevation of approximately 20 degrees in the eastern sky. The object appeared very suddenly as if it came through the clouds, and appeared to the eye as a very bright ovoid light—purple in colour with a periphery of white. Two members of my group who observed the object through binoculars both remarked they could see a crimson light in the centre; this was also attested to by witnesses with good vision.
>
> The object remained stationary for approximately 30 seconds, during which time Mr. Foxwell was able to take the first of his photographs. The object then moved slowly to the right—towards the town—and lost a little altitude in the process. At one stage in the movement it dimmed considerably as though obscured by low cloud. The object continued moving for approximately 20 to 30 seconds, and then stopped again. The light then increased considerably in intensity, though we could not be sure if the object was moving directly towards the observation point, or if it remained stationary. At this point the alarm of a detector sounded and a witness ran to switch it off. After 10 to 20 seconds the light dimmed and went out as though concealed by cloud. However, we were all certain that the object had not moved once more. The sighting had lasted for approximately one to one and a half minutes.

It would perhaps be unfair to criticize the duration estimate and even the "20 degrees in the eastern sky." Of more interest is the movement described, it being inconsistent with the observed stationary light but consistent with the implied movement of the UFO in the fake photographs. Neither Ben nor any subsequent investigator ever commented, to my knowledge, on the fact that the photographs did not include that part of the horizon on which the purple light was located.

In the same issue of *FSR* Percy Hennell, a photographic consultant to *FSR*, reported: "Let me say at the outset that there is nothing about these photographs which suggests to me that they have been faked in any way" (Hennell 1970). And later, because his enlargements showed the fake UFO to be slightly elongated at one end, he suggested that "some propulsive jet may have been operating to move the object to the right."

Both Ben and Hennell identified car headlamps on the pictures (see figure) but, seemingly unaware of the A36 main road, assumed that they were caused by a single vehicle on a track on Battlesbury Hill.

R. H. B. Winder, a consultant to *FSR*, was presented with the artist's impression of the purple light and observed: "These colours are reminiscent of the colours associated with ionisation in air" (Bowen 1970).

After examining the negatives, Pierre Guerin, director of research at the Astrophysical Institute of the French National Centre for Scientific Research, published a "tentative interpretation" of the Warminster photographs (Guerin 1970).

> In my opinion there is no question of the object photographed being in any possible way the result of faking. The question that arises is why the appearance of this object on the photographs is so different from its appearance to the eye according to the descriptions given by the witnesses [Bowen 1970].
>
> In this connection it should be noted that the eye is not sensitive to the ultra-violet radiations of wave-lengths of less than 0.36 microns, whereas all photographic films are, whether panchromatic or not. On the other hand, the sensitisation of the panchromatic films in commercial use (such as the Ilford HP4 emulsion) drops off very sharply in the red area for wave-lengths of more than 0.63 micron, while the eye remains sensitive to them up to around 0.70 micron and even a bit beyond that.
>
> Consequently the interpretation of this divergence between what the witnesses "saw" could be quite simple: namely, that the object photographed was emitting ultra-violet light, which the eye does not see. Around the object, however, a ruby-red halo, probably of a monochromatic colour and doubtless due to some phenomenon of air ionisation, was visible only to the eye and in actual fact has made no impression on the film.
>
> If this interpretation is correct, the consequences which we can draw from it are important. As will be known, in a recent issue of *Flying Saucer Review* (Vol.15, No.4), John Keel disputed the presence of any solid material object inside the variable luminous phenomena which he calls "soft sightings," claiming thereby that the solid phase of the UFO phenomenon is only one of the aspects—and no doubt the least frequent aspect—of the phenomenon in question. The Warminster sightings do indeed appear to furnish us with an example of "soft sighting" linked with the presence, at its centre, of a solid object not visible to the eye but emitting ultra-violet light.
>
> That the UFOs can appear, or disappear, on the spot, when leaving or entering our usual four-dimensional space-time is probably true. But it would be rash to assert that they do not always possess a material, solid body

right from the moment that they have penetrated into this space-time. Despite the claims of John Keel, the "soft sighting" could in fact very well be merely secondary effects of the presence of solid objects, whether or not visible to the eye, in the gaseous medium of our atmosphere. This hypothesis had already been formulated long ago, and the Warminster sightings seem to confirm it.

The March-April 1971 issue of *FSR* published five reports related to the Warminster photographs (Bowen 1971; Scammell 1971; Ben 1971; Collins 1971; Samuels 1971). Charles Bowen's "Progress at Cradle Hill" included a print of the negative strip showing all four photographs. The images are small but a ruler is the only apparatus required to measure the magnification discrepancy outlined earlier (by comparing the distance between ten streetlamps on negative one with the distance between the same ten streetlamps on negative four). Scammell (a land surveyor), Ben, and Collins each attempted to pinpoint the position of the photographic UFO with respect to Battlesbury Hill. Each generated gross errors, largely through assuming that the A36 main road car headlamps were on the side of Battlesbury Hill. Collins calculated that the UFO was 60 feet long and, including the "globes," 30 feet in diameter. Michael Samuels, an "independent consulting photographer," widened the debate with a three-page article discussing erroneously the effects of ultraviolet radiation on photographic emulsions.

Their investigations continued. The "Case of the Warminster Photographs" rapidly became a UFO classic, and it incorporated qualities rarely found together: multiple "independent" witnesses and good photographic data (the film was chaperoned from camera to developing tank), and the prime investigators were linked through *FSR*, a magazine regarded in the field as a forum for dispassionate UFO research.

It was therefore unfortunate that, when presented with a case of such potential importance, the investigators failed to learn the geographical layout of the sighting area and no effort was made to examine the basic data critically. The negatives contained glaring inconsistencies that were never discovered, and in more than two years no attempt was made to interview the prime witness, Foxwell. Yet without his photographs the sighting would have been insignificant.

* * * * *

Regrettably, my experiences in the UFO field have shown that the investigator incompetence demonstrated by this particular experiment, far from being exceptional, is typical. Of course very few UFO reports stem from calculated hoaxes like this one; but when reading or hearing of any "sight-

ing," it is important to be aware of the general caliber of UFO enthusiasts, even if they do not appear to have been directly involved in the case. Their irrational thinking is infectious and has frequently provided the media with entertaining headlines. As a result, certain members of the general public, on seeing something in the sky that is strange to them, describe not what they saw but what they think they ought to have seen.

That unidentified flying objects exist is undeniable, as hundreds of thousands have been reported globally since biblical times. Argument otherwise would suggest, absurdly, that every human being has always been fully conversant with the multifarious causes of visual phenomena. UFOlogists have, therefore, plenty of material to contemplate and often plead to the scientific community for assistance and recognition of their exotic theories. Assistance is sometimes forthcoming—for example, the University of Colorado's *Scientific Study of Unidentified Flying Objects* (Condon 1969)—but acceptance of the alien nature of UFOs is not. This is simply because the evidence, when subjected to detailed critical analysis, fails to provide the degree of integrity required. UFOlogists are reluctant to accept that scientific evaluation requires inconclusive, suspicious, or self-contradictory testimony to be classified as such and that a hypothesis based on disreputable evidence or myths remains weak, unconvincing, and adds nothing useful to the understanding of our world. Instead, they prefer suggesting that government and scientific authorities are party to a world-wide conspiracy to prevent the "truth" from being known, demonstrating remarkable faith in governmental unity and little knowledge of the scientific fraternity. More than once they have suggested that science should be "modified" in order to cope with UFO phenomena and have actively encouraged the growth of UFOlogical pseudoscience. Occasionally individuals with relevant technical backgrounds become involved; it is disturbing to witness the abandoning of their mental disciplines and common sense. Unfortunately, credibility is given to dubious evidence when it is endorsed by people of high professional status—such as Dr. Pierre Guerin in the controlled hoax.

In conclusion it is felt that the wealth of UFO reports available for study represents nothing more significant than the relatively simple events listed in paragraph three. There is no logical reason whatever to decide that a more exotic, perhaps extraterrestrial, solution is justified. If ever there is subtle evidence suggesting extraterrestrial visitation, it is unlikely to be discovered by a typical UFOlogist, and care must be taken to ensure that the signs are not swamped or destroyed by nonsense.

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Don Juan vs. the Piltdown Man

"Don Juan may be the biggest hoax in anthropology since the Piltdown man," Marcello Truzzi wrote (*Zetetic*, Spring/Summer 1977). The comparison is far from superficial. Though Dawson's dawn man (*Eoanthropus dawsoni*) clung to the evolutionary tree for 41 years (1912-1953), whereas Carlos Castaneda's UCLA-man trod quasi-Sonoran sands no more than eight (1968-1976), the episodes are alike in several ways.

Let me list some similarities and differences between don Juan and Piltdown man:

Each was hailed by some as a giant step in science but was doubted from the beginning by others.

Each was the product of a clever deceiver who was very knowledgeable about the relevant scientific theory.

Each combined disparate elements—Piltdown, bones of man and ape; don Juan, pre-literate and modern conceptual systems.

Each provided superficially plausible support for a particular theoretical tendency—Piltdown, for brain primacy; don Juan, for ethnomethodology.

Each could have been exposed at once by a competent, skeptical inquiry into the shape of Piltdown's teeth, into the existence of Carlos's voluminous Spanish field-notes, never offered for examination and now said to have been destroyed by flooding of Castaneda's basement.

Each wasted the time of, or made fools of, some trusting colleagues.

Each implicated possible but uncertain accomplices—Piltdown, Teilhard de Chardin, William Sollas, and Arthur Smith Woodward; don Juan, the professors who should have known they were dealing with an illusionist but apparently did not.

Each cast suspicion on an innocent party—Piltdown, on Dawson; don Juan, on Theodore Graves, who was said in the popular press to have been the "prime mover" of Castaneda's doctoral committee, though in fact he had left the country a year before Castaneda's dissertation was signed by five other professors.

Neither hoaxer confessed. Castaneda can still do so, of course, but frank confession would be quite out of character for him. His flagrant fourth and outlandish fifth books constitute a sort of implicit confession.

Each was supported by a faction—Piltdown, by British paleoanthropologists; don Juan, by anyone who thought publishing *The Teachings* or granting a doctorate to Castaneda would give merit to ethnomethodology or UCLA anthropology.

Each was rendered more congenial by cultural bias—Piltdown, for favoring intelligence and white superiority; don Juan, for demonstrating that an antirationalist noble savage could reflect 1960s idealism back to dissident

but regular consumers of electricity and Kool-Aid as though from an ancient culture.

Each enjoyed the benefits of fallible cognition—as when Sir Arthur Keith thought he saw an orang's forehead on Piltdown's skull; as when academic readers consistently failed to notice how seriously the don Juan books contradicted each other.

Each was protected by taboo and tact—Piltdown must not be challenged by mere suspicions; Carlos's Spanish field-notes could not be demanded by scholars, who deferred to colleagues on his committee, or by committee members, to whom Castaneda seemed perennially on the verge of a nervous breakdown, psychologically too fragile to bear the normal burden of proof.

In other ways the episodes were quite different. The scientific cost of Piltdown was high; of don Juan, low. Some 40 years Sir Arthur Keith played dupe to Piltdown; much earth was moved in search of additional fragments; many lectures and articles expounded Piltdown's significance. Few anthropologists subscribed to don Juan; no scientific expeditions went out to find him; trifling research funds were diverted to him. The spate of Juanist writings has been literary, philosophical, and occult, seldom scientific.

Piltdown did more harm than good, his only contribution being a warning against further frauds. Even in the realm of science don Juan may do more good than harm: exemplifying an inspiring, if unattainable, ideal of fieldwork, revealing a widespread confusion between authenticity and validity, and manifesting for laymen as well as professionals the rift between, in Colin Turnbull's words, those anthropologists who "regard anthropology primarily as a humanity and those who regard it primarily as a science."

Historians, Ian Langham observes, have tried to sweep the Piltdown episode under the rug, but to do so "is to ignore what was undoubtedly the mainstream of British physical anthropology for several decades." Likewise, some would dismiss the don Juan hoax as a money-making scheme or an administrative mixup having nothing to do with the mainstream of anthropology, but to do so is to forgo valuable lessons. By facing up to the implications of frauds and hoaxes, and of their acceptance in quarters where people should know better, and of attempts to dismiss them once exposed, we can learn much about the way science is conducted, about the nature of sophisticated beliefs, and about the surprising difficulty of achieving consensus through civil dialogue among well-disposed, intelligent, professional people.

—Richard de Mille

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Tiptoeing Beyond Darwin

An Examination of Some Unconventional Theories on the Origin of Man

J. Richard Greenwell

The concept of ancient astronauts, the idea that extraterrestrials visited Earth in times past and transmitted new knowledge to early civilizations, has captured the public imagination and has been promoted by numerous writers. A close examination of these claims has found no evidence that such visitations ever occurred (Story 1976, 1977).

This paper addresses critically some related claims: that man, rather than having evolved through a process of natural selection and other evolutionary forces, is a result of (1) cross-breeding between extraterrestrials and ape-men, or the genetic manipulation of ape-men (the hybrid hypothesis), or (2) an extraterrestrial transplant to Earth and that man is not even related to the primates (the transplant hypothesis). The original extraterrestrials, many believe, have since maintained a parental eye over mankind, thus the many UFO reports since the practical application of nuclear energy.

The best known of the hybrid-hypothesis proponents are probably Brinsley Le Poer Trench (1960, 1969, 1973), and Erich von Däniken (1969, 1970, 1973, 1977). However, the most lucid argument supporting the hypothesis is a book by Max Flindt and Otto Binder (1974), based on a smaller manuscript published privately by Flindt in 1962, entitled "On Tiptoe Beyond Darwin." They postulate that "whenever hominid species in the past made inexplicable leaps ahead, in any area, those leaps had one common cause—*the biomanipulations of the starmen.*"

Specifically, they claim: (1) that man's primate ancestors were brought

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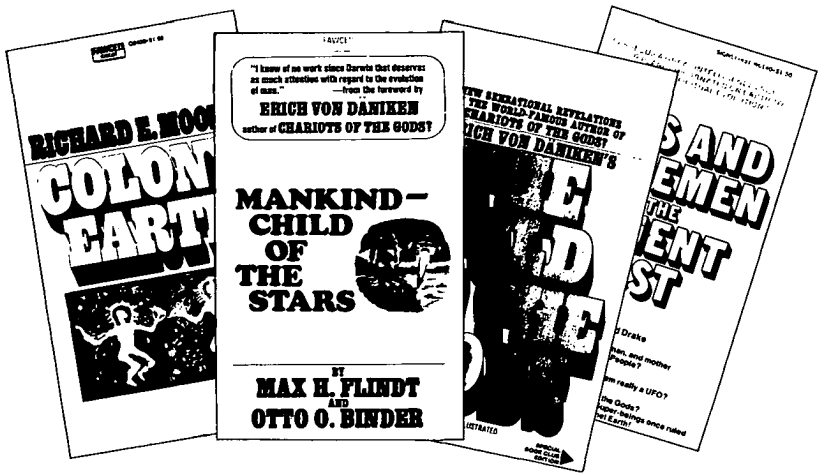

Some of the books that promote the hybrid and transplant hypotheses.

down from the trees to become bipedal by the artificial introduction of dominant genes for upright walking; (2) that *Ramapithecus* was genetically "improved" 12 million years ago, thus explaining the lack of intermediate fossils between it and *Australopithecus*; (3) that *Homo erectus* was physically transported to those areas where his remains have been found, being unable to migrate to those locations because of the "fierce predators" of the time; (4) that the demise of *Homo erectus* was planned in order to allow Neanderthal, the new, improved man, to survive; (5) that something went "wrong" with Neanderthal after a 75,000-year trial-period; and (6) that Cro-Magnon (modern) man was finally the "successful" bioengineering feat of the extraterrestrials.

Flindt and Binder have accumulated an enormous but selective amount of evolutionary, paleontological, anatomical, physiological, neurological, and behavioral data and seem truly puzzled by "gaps" and "mysteries," which they solve with the sweeping, all-encompassing explanation of extraterrestrial intervention. The fact is that most of the "mysteries" are not nearly as mysterious as they believe and are not mysteries at all if one has even a rudimentary understanding of the close relationship between changing environments and evolution and the resulting integrated functions of the senses, morphology, and behavior.

For example, they ask: "If the forests did not decline but grew more lushly as time passed, why in the world should a tree-dwelling species of animal desert his original habitat? It is questions like these that tongue-tie the anthropologists." In fact, our ancestors probably came down from the trees and consequently became bipedal not because they *wanted* to but because they *had* to. Climatic changes in Miocene East Africa created isolated pockets of desiccation; the resulting deforestation, plus pressure

from monkey radiation, undoubtedly increased competition among hominoid species. The strong ones, ancestors of today's great apes, claimed the remaining trees; the weaker ones, our ancestors, were forced onto the marginal lands or the arid savannahs, where they became bipedal by necessity (Hockett and Ascher 1964). It is even possible that man's biological and social development has, in part, been a result of adaptation to arid zones (Greenwell 1978).

Von Däniken, another hybrid-hypothesis proponent, claims that "if the climate drove the apes down from the trees during the following millennia, that must have included all kinds of apes and not just the one which selected to produce *homo sapiens*" (1973). Von Däniken sees this as proof of outside intervention: if descending from the trees led to toolmaking and intelligence, "there should not really be any apes left today." These statements ignore the very important factor of ecological dominance. The stronger apes *stayed* in the trees, and *remained* apes.

Flindt and Binder pass over the question of *Homo erectus*'s intelligence, which was far superior to that of the "fierce predators" to be encountered in migrations; even the beginnings of language (and the resulting social cooperation) can far outweigh any animal's advantages in speed, bulk, or offensive characteristics. They also seem to subscribe to the Victorian image of Neanderthal as a dumb and clumsy brute, something that went "wrong." Neanderthal is now seen in a new light and is accorded (at least in American anthropology) the status of the first true man, probably with language and a concept of death, and maybe life after death (Leroi-Gourhan 1975; Solecki 1975).

They also ask why man alone became intelligent, why his brain weight is relatively higher than that of other animals, why some Neanderthals had larger braincases than modern man, why man alone can "speak words," why man alone can make tools, and why human civilization sprang up "abruptly." All these kinds of questions have simple or conventional answers. One example is man's almost unique hairlessness, which they attribute to his descent from hairless extraterrestrials. An alternate hypothesis is that a reduction in body hair came about through an increased need to sweat in strenuous, open-country hunting (Montagu 1964). Other hypotheses have been reviewed by Cloudsley-Thompson (1975).

In an attempt to "prove" the hybrid hypothesis, Flindt and Binder point out the anatomical and physiological distance that separates man from the apes, and quote Sir Arthur Keith, a distinguished British physical anthropologist from earlier in this century, who listed the number of individual generic characteristics of man, apes, and monkeys, based on many years of anatomical study (Keith 1911). They believe that Keith's

data elevate their own case to a plateau so high that it challenges the Darwinian theory of evolution. I will address this question in more detail later.

Von Däniken even goes a step beyond the hybrid hypothesis. He believes that man's extraterrestrial ancestors were the losers in a cataclysmic cosmic battle (1973). Like Flindt and Binder, von Däniken is mystified by human evolution and raises questions that, to him, can be answered only in terms of extraterrestrial genetic intervention (1969, 1970, 1977). A careful review of the questions he raises, however, finds them all perfectly soluble within the framework of conventional theory in human evolution.

The other major school of thought believes that man was "transplanted" here and is not even genetically related to the primates. Richard Mooney (1974, 1975), for example, dismisses the idea of cross-breeding or genetic manipulation, claiming that "there is only a superficial physical resemblance between the anthropoid apes and man" (1974). He states, curiously, that his theory "solves the problem of man on Earth without invoking either evolution or miraculous creation."

Although he presents less data than Flindt and Binder, Mooney goes so far as to propose that man was placed on Earth as recently as 40,000 years ago ("with clothes, fire, weapons, shelter and with a native ability and intelligence that is certainly no less than that possessed by peoples of the present time") and interprets paleoanthropological data in such a way as to support this astonishing proposition. Mooney questions why hominids appeared only in the past million years and not in the Miocene and Pliocene, "an ideal time for the precursors of humanity to have appeared." Our hominid precursors, in fact, *did* appear in the Miocene or Pliocene, but Mooney has confused the human lineage of hominids, which probably evolved about 10-12 million years ago, with the human genus *Homo*, which evolved 3 to 4 million years ago.

He then seems to expect, teleologically, that evolution has an ultimate purpose, that the rapid development of intelligent species is of prime importance to nature. There is absolutely no evidence for this. On the contrary, man is almost certainly the chance result of a long series of small steps involving many climatic, environmental, physiological, and social factors.

I will now examine a number of specific characteristics shared mutually by man and the primates, particularly the great apes. Entire volumes could be, and have been, written on such morphological and physiological similarities, so we shall restrict ourselves to a few important ones. These clearly demonstrate the intimate evolutionary linkages man has with his primate relatives.

Before proceeding, two points should be made. First, it should be

noted that primates, as an order, are very "generalized." That is, they have few morphological features adapted for highly specialized functions. This has permitted their successful adaptation to a wide range of environments. Thus we find today that some species are strictly arboreal, while others are only terrestrial. Some are nocturnal; others, diurnal. Some inhabit humid, tropical rain forests; others, dry grasslands or even deserts. Some eat only vegetable matter; others, only fruits or insects. And so forth. These wide adaptive differences have even led to disagreements concerning whether or not some species should be included in the order. It is therefore not at all surprising that the hybrid-hypothesis proponents, unversed as they are in primatology, should interpret the many differences that do exist between man and ape as something mysterious.

The second point to be made is that morphological and physiological evidence, plus the evidence of fossils, tells us that today's prosimians, New World monkeys, Old World monkeys, apes, and man, represent, in ascending order, specific branches or stages of primate evolution over the past 60 or so million years. Clearly, today's prosimians, for example, are not exactly what they were, say, 40 million years ago, but they *do* represent the morphological and physiological characteristics the prosimians had at that time, or even earlier. We thus have, today, a living laboratory of primate evolution. As we shall now see, this living laboratory provides the data needed to verify man's direct descent from primate ancestors, without having to resort to genetic manipulation by extraterrestrials or other such ideas.

The Evidence of Genetic Biology: Amino acid sequencing of homologous proteins and immunological and electrophoretic methods of protein comparisons have demonstrated that human polypeptides (chains of amino acids that form protein molecules) are more than 99 percent identical to those of the chimpanzee (King and Wilson 1975). The genetic distance between humans and chimpanzees is so small, in fact, that it corresponds to that between sibling (closely allied) species and is less than between two nonsibling species of the same genus. As man and chimpanzee do not even belong to the same family, these findings indicate that structural gene evolution and morphological evolution may proceed at different rates, a proposition further supported by a comparative study of the morphological differences between man and chimpanzee and two dissimilar species of frogs (Cherry, Case, and Wilson 1978; Cherry et al. 1979). At the same time, it also demonstrates the very real genetic closeness between man and chimpanzee.

This genetic closeness is again confirmed by the similarity between the 46 chromosomes of man and the 48 chromosomes of the great apes

(Chiarelli 1972; Miller 1977). General and regional bonding methods of human and primate chromosomes have established that the karyotypes (arranged microphotographs of chromosomes) of man, chimpanzee, and gorilla are very similar, so much so that it is difficult to establish their evolutionary distinction (Miller 1977). These studies also indicate that the gorilla may actually be evolutionarily closer to man than to the chimpanzee.

The blood proteins of primates have also been analyzed and compared (Goodman et al. 1972; Wilson and Sarich 1969). Predictably, the serum proteins of the tree shrews (the most "primitive" of primates) and other prosimians are the least like those of man, but they are nevertheless more like man's than those of all other nonprimate mammals. The New World monkeys come next, followed by the Old World monkeys, and two of the apes—the gorilla and the chimpanzee. The serum proteins of the orangutan and, in particular, the gibbon differ more markedly. Comparisons of polypeptides, chromosomes, and blood proteins demonstrate a definite evolutionary linkage between man and all the primates, particularly the apes.

The Evidence of the Digestive System: The alimentary tract of all primates is quite similar (with the exception of the African leaf-eating monkey species, which have relatively large and sacculated stomachs, necessitated by their diet). Even the tree shrew's digestive system is quite similar to that of man (Clark 1963). While the liver of monkey species is located in a different position than that of the apes and man, the latter two have the liver attached in the same place, underneath the diaphragm. It can be stated that "the four (modern) anthropoid apes and man possess in common a number of visceral characteristics that clearly pronounce their affinities" (Strauss 1936).

The Evidence of Parasites: The great apes and man are hosts to more of the same parasites than man shares with any other mammals (Dunn 1966). Again predictably, man shares most of these (over 50 percent in one parasite genera) with the chimpanzee and the gorilla, fewer with the orangutan, and even fewer with the gibbon. It is also apparent that the malarial parasites of man and those of every one of the apes evolved from a common ancestor. This is an important point, as it indicates that their hosts, man and apes, did likewise.

The Evidence of Dentition: Human dentition varies from ape dentition in several important features: the dental "arch" is curved in man, while in the apes it is squared. Human canines are small and blunt and erupt early

in life, while in the apes they are large, pointed, and erupt later in life. There are other differences too, but the overall dentition pattern of both is strikingly similar, implying a common origin. The differences can certainly be explained by ecological and adaptive factors.

One of the most important similarities between man and apes is in the dental formula. With the exception of the marmosets, the dental formula for the more "primitive" New World monkeys (and also for some of the lemurs) is

$$\frac{2.1.3.3.}{2.1.3.3.}.$$

That is, each side of the upper jaw and lower jaw has two incisors, one canine, three premolars, and three molars. In the Old World monkeys, the dental formula is

$$\frac{2.1.2.3.}{2.1.2.3.},$$

and it is no coincidence that this is the same formula for both the apes and man.

The Evidence of Vision: Most primates, including man, have two kinds of cellular photoreceptors—rods and cones—in their visual apparatus. The former permit vision in dim light, and the latter permit bright-light color vision. Visibility curves, which plot sensitivity as a function of wavelength, give different maximum sensitivities in the scotopic (rod) visibility curve and the photopic (cone) visibility curve. Although visibility curves have not been determined for the apes, maximum scotopic and photopic sensitivities have been found to be very similar in both New and Old World monkeys, apes (except in scotopic curves, for which they have not been tested), and man, at 510 and 550 nanometers, respectively (King and Fobes 1974). Visibility curves, according to data provided by living primates, have remained fairly constant throughout the later stages of primate evolution.

Color vision is exceptionally good in the primates, unlike in most other mammals. It has been proposed that the first fruit-bearing trees, which appeared about the same time as the first primates, may have been a contributing factor (Polyak 1957). Tests have shown that New World monkeys are protonomolous trichromats but that the deficit is less severe in the more "advanced" species of that suborder. Old World monkeys, chimpanzees, and, again predictably, man are normal trichromats, indicating that there has been little recent evolutionary change (King and Fobes 1974).

Stereoscopy (binocular vision) and detail accuity are two other primate features that have evolved primarily as a result of arboreal habitat. As expected, man has excellent stereoscopy and detail accuity. It can be reasonably concluded that man's visibility curves, color vision, stereoscopy, and detail accuity all suggest his close relation to the primates.

The Evidence of Olfaction: When some mammalian insectivores took to the trees and evolved into the primate order, the need for olfactory sensitivity decreased as the need for visual sensitivity increased. We find, in fact, that the relative volume of the olfactory areas of the brain decreases through the higher primates, and, as shown below, is lowest in man (Fobes and King 1977):

nonprimate insectivores	.1062% of brain volume
tree shrews (prosimians)	.0393
lemurs (prosimians)	.0190
tarsiers (prosimians)	.0053
New World monkeys	.0016
Old World monkeys	.0011
great apes	.0007
man	.0001

This indicates a close evolutionary linkage between man and other primates, particularly the apes.

The Evidence of Audition: Auditory ability probably changed during primate evolution, as represented by the following data on the maximum hearing frequencies of several present-day mammals, including five primates:

dolphins	100,000 cycles p.s.
cats	70,000
lemurs (prosimians)	75,000
New World monkeys	46,000
Old World monkeys	45,000
chimpanzees	26,500
man	20,500

It should be noted that, while 20,000 cycles per second is about the maximum frequency at which man can hear, his best sensitivity is at about 3,000 cycles per second. The best sensitivity for the apes is about 2,000 cycles per second. The apes and man jointly share a reduced audial fre-

quency detection capability, relatively unique among both the primates and the mammals (Fobes and King 1977).

The Evidence of the Grasp Response: All primate infants, including human babies, possess an involuntary grasp response (it can be tested by lifting the subject off the ground while it clings to a rod, or to one's fingers). This response presumably evolved as a result of the need to cling to the parent's hair in an arboreal habitat (voluntary grasp responses occur as the infant matures). Rhesus (Old World) monkeys can so grasp for over 30 minutes. Chimpanzee infants are able to grasp for up to five minutes; and human infants, for up to two minutes. This indicates a definite primate feature in man, which has decreased since he adapted to terrestrial locomotion.

The Evidence of Reproductive Biology: Most mammals have placentas, which bind the developing fetus to the female uterine wall during gestation. The haemochorial placentas of the primates vary in structure, the monkeys and apes having the most elaborate. It has also been found that Old World monkeys have more structurally efficient placentas than New World monkeys (Hill 1932). Furthermore, the placentas of both the apes and man are very similar to the Old World monkeys, and all species tend to have single births, an indication, again, of an evolutionary linkage.

Concerning the reproductive organs, both male and female genitals vary from species to species, and offer little evidence of evolutionary linkages. However, while human females do not visibly exhibit monthly sexual cycles, they do experience monthly menstrual bleeding, as do Old World monkey and ape females.

The Evidence of Neotony: Neotony is a feature in which a species retains immature characteristics in the adult form, and this is particularly so in man. For example, adult humans, which have the slowest growth rate of all the primates, resemble infant chimpanzees more than they resemble adult chimpanzees. The infant chimpanzee has a humanlike "flat" face when compared to the protruding faces of its parents, does not have the brow-ridges of adult chimpanzees (or early man), and has its foramen magnum (the "socket" at the base of the skull into which the spine fits) located directly beneath the skull; as the infant matures, the foramen magnum will gradually move toward the rear of the skull in order to balance the quadrupedal adult form (von Koenigswald 1962). In man, of course, it remains at the base of the skull.

Neotony can be closely associated with the evolution of intelligence, as infancy, childhood, adulthood, and the life span itself have become increas-

ingly longer in the apes, and even longer in man (Napier 1970). This has permitted the better acquisition of knowledge and its subsequent transmission to new generations. At the same time, it indicates an evolutionary continuity between man and the apes. Not that man descended from today's apes, but that both descended from the same genetic stock millions of years ago.

The Evidence of the Brain: Primates are particularly distinguishable from other mammals by an increase in the size of the occipital lobe (rear part of the brain) and a remarkable progression in the size of the frontal lobe, which reaches its maximum with the great apes and man. Although primates have undergone a brain weight increase in evolution, the higher intelligence exhibited by the apes is probably more related to cerebral convolutions, which permit more efficient use of cranial space. Man's convolutional pattern is similar to that of the apes but is even more complex; his relative brain weight is more than double, and his absolute brain size, some 1,400 cm^3, is about three times that of the apes.

Nevertheless, the increased cortical representation for vision versus the decreased olfactory representation, the increase in the frontal lobe size, and, above all, the increase in the complexity of the cerebral convolutions, which reach a high degree in the apes in general and man in particular, indicate an evolutionary linkage that is not only beyond dispute but unique in the earth's natural history.

The Evidence of Intelligence: While "intelligence" can be a controversial word when used among certain behavioral scientists, it can be stated, nevertheless, that the apes are the most "intelligent" of the nonhuman primates. This has been confirmed in many specially devised tests. Furthermore, numerous chimpanzees trained in computer console use, plastic symbol representation, and American Sign Language use have shown extraordinary abilities in the expression of true language, one of the last bastions reserved for man. Language displacement (the mental manipulation of objects or events in time and space) and reconstitution (the joining together of two separately learned symbols to form a unit, i.e., "waterbird" for duck) have been amply demonstrated.

The great apes undoubtedly exhibit the most advanced intelligence known to man, except for man himself. This can only be a further confirmation of the evolutionary linkages between the two.

Having reviewed some important features shared by man and the nonhuman primates, particularly the great apes, it can reasonably be concluded that all descended from common progenitors. No evidence that

can survive critical scrutiny has so far been presented to support the hypothesis of man's partial or total extraterrestrial origin.

It is the opinion of Flindt and Binder (1974) that scientists should subject the hybrid-hypothesis data to computer analysis. They do "*not* feel it necessary to bow to the verdict of scientists and their opinions... Computers do not become swayed by such human failures." They do, however, offer to bow to a computer verdict. Despite this, such an enterprise would serve little purpose. Computers cannot make the kind of definitive judgments Flindt and Binder seem to expect of them, and the data they would submit for analysis would be too selective and biased. A computer analysis can only be as valid as the data used.

They claim, for example, that Sir Arthur Keith's data on the number of individual characteristics of man and ape prove their case. Specifically, they state that Keith's data are:

> ... of *paramount importance* as scientific support for the Hybrid Man theory. Out of it leaps the tremendous fact: Of the higher primates, Man has 312 physiological characteristics *peculiar to humans alone*, many more than any other species. Does this sound as though Man were some "close relation" to the great apes? Not if Man has *three times as many differences* from his "fellow primates" as any of the other specimens. This seems to us convincing evidence that significantly lifts our concept out of the hypothetical class into a bona-fide theory. And into a theory with such immense supportive evidence that it can, in our opinion, seriously challenge the classic Theory of Evolution.

This is a very serious statement, and the basis for such a revolutionary new theory certainly deserves further examination. First, it should be emphasized that what is important is not the number of individual characteristics man possesses *separate* from the apes but, rather, the number of characteristics he *shares with* the apes. The sharing of such characteristics, from lower primate to higher primate, and finally to man, is the only true indicator of evolutionary linkages (or the lack of them, if such shared characteristics are not found).

The fact is, while Flindt and Binder correctly state that man has 312 anatomical characteristics strictly his own, they fail to mention that he shares 396 with the chimpanzee, 385 with the gorilla, 261 with the orangutan, and 93 with the gibbon. These data were similarly made available by Keith (1911). Flindt and Binder chose to ignore them.*

*There are several ways of interpreting the data provided by Sir Arthur. The figures above represent this writer's interpretation, following consultation with others, who were unaware of the author's purpose. While different interpretations could result in different figures, these would still reflect the basic fact that man shares more anatomical and physiological characteristics with the apes than he alone possesses. Similarly, the new characteristics that have been identified in the ensuing 70 years do not alter these results.

A third and less well known hypothesis, which has not been reviewed here, is one that can be referred to as the spore hypothesis. This concerns the idea of micro-organisms being planted on Earth billions of years ago by extraterrestrials and left to evolve to their present forms (Crick and Orgel 1973). Some writers have even combined the spore hypothesis with the hybrid hypothesis. With minimum data to work with, little can be stated about the spore hypothesis, other than to speculate on its likelihood.

One final observation is in order. None of the hypotheses examined above, nor any of the many other "ancient astronaut" claims, have any direct bearing on the question of modern UFO reports. They represent two totally separate sets of data. Consequently, any attempt to solve one by explaining the other constitutes mere speculation.

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Conjurors and the Psi Scene

James Randi

As a professional performer of pseudo-miracles, and a lecturer who devotes considerable time to question-and-answer sessions with my audience, I am often asked about the role that conjurors play in perpetrating hoaxes of the paranormal. Their responsibility in this regard is, I must admit, rather large.

Some magicians—Uri Geller is a prominent example—have begun as rabbit-in-hat night-club-and-birthday-party performers and "graduated" into full-blown "psychic" frauds. Others never played the regular entertainment circuit but discovered the gullibility of the public incidentally and were catapulted into prominence by well-meaning but misguided scientists who carried their banner proudly. That kind of banner does not survive inclement weather well.

There is even a peripheral fringe of magicians and would-be magicians who, either because of faulty judgment or scant expertise, are coaxed into a short ride on the publicity bandwagon as a result of their wide-eyed endorsement of some miracle performed by a passing "psychic." Two otherwise unremarkable magi in the State of Georgia were taken on that ride in recent years and are still nursing the bruises.

But there are numerous members of the profession who in decades past managed to set the stage for the present situation, and their names should be recalled for a full understanding of the situation.

The newspapers in June of 1977 were full of reports that Robert Toth, Moscow correspondent for the *Los Angeles Times*, had been expelled from the Soviet Union for accepting a document from a Soviet scientist. What made it ten times more newsworthy was that the document allegedly

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James Randi is a conjuror, writer, and tireless investigator of proclaimed psychics.

contained information about Russian ESP research, particularly concerning the function of "psi particles" in explaining paranormal wonders. In passing, it would be well to mention that the psi particle of the modern physicist is so named for convenience and has no connection whatsoever with the nomenclature employed by the parapsychologists. The confusion may have arisen, in this case, with the Russians themselves or with the press.

The Soviet Union granted official sanction to psi research in about 1958, when it was rumored that the U.S. military had been experimenting in communication between submarines by telepathy. Sadly, the truth has not yet percolated through to the Pentagon, and to this day they are being talked into such tests by the glamor-boys of SRI International. Superstition dies hard.

One Soviet scientist, Leonid Vasilyev, had been denounced officially for psi work he carried out in the 1930s, but he was hastily recalled to favor so that the Soviets could catch up with the United States. A Russian stage magician, Volf Messing, who had made a fortune during World War II as a mind-reading act and had contributed enough money to the Soviet war effort to buy them two bombers, met with Stalin and so impressed that potentate that he was referred to the KGB for the further development and testing of his powers. Probably Messing was responsible for much of the Soviet interest in psi, which continues to this day.

The KGB is most definitely working in the field, and in 1972, at the University of Kazakhstan, a conference was held in which at least five scientific papers on the subject of psychokinesis were presented. The papers were considered state secrets and were not made available to the press. Official status was granted the study of ESP when, in 1975, the Great Soviet Encyclopedia asserted that studies were being conducted there on a high level. One expatriate told of work he had done in a Siberian lab in which shocks were applied to day-old kittens to determine the reaction of their mothers located some distance away. We are not told of the results, nor of the opinions of the felines involved.

One reason the West may know so little about the Russian researches into psi, according to Victor Zorza, of the *Washington Post*, may be that "there is not much in it that is worth knowing." And we learn from the CIA chief that in the United States a well-funded project named MK-Ultra was terminated in 1965. One of its subjects of investigation was whether a popular magician of the day could read thoughts at vast distances. We suspect that the magician concerned was Joseph Dunninger. Joe could indeed read *thoughts* but not minds. But MK-Ultra had other interests, too. It employed the talents of John Mulholland, a prominent conjuror and writer on the subject, to assist them in learning "aspects of magicians' art

useful in covert operations." I'm sure that John could have taught them much; but obviously he did not teach them discrimination between myth and fact, for CIA money continues to go into the coffers of the spook-artists and parapsychologists to this day.

Magician/photographer Charles Reynolds is so captivated with the career of a magician/psychic named Erik Jan Hanussen that he is preparing an entire book on the man's life. Modestly billed as, "The Mental Wizard of All Ages," Hanussen claimed ability in hypnosis, astronomy, astrology, alchemy, spiritualism, ESP, and every other area he could get away with. He flourished in Hitler's pre-war Germany, having taken the Scandinavian name in preference to his Austrian-Jewish one of Steinschneider; and despite his origins, the Nazi hierarchy adopted him and accepted his wonders. He was influential in molding the pro-occult attitude of the Nazi Party and, in the tradition of such artists, was wont to "spontaneously" make small objects move about at his soirees—a type of "miracle" that also enchants the intellects of today and causes them to rush into print with accolades.

Hanussen came to an evil end; he was found trussed up and shot in the woods one spring day in 1933, shortly after having "predicted" the burning of a building whose description sounded very much like that of the Reichstag. Possible involvement of the Nazis in his violent end is considered likely, though Hanussen was involved in several varieties of blackmail and other questionable pastimes that may have made his life precarious.

In recent years, I have seen performers rise in this profession along quite legitimate lines, then veer off into the less savory directions that offer themselves readily. There is money to be made in these side avenues of otherwise respectable show business, and it is a powerful lure. At one time, former Baptist minister David Hoy, of Kentucky, was known as Dr. Faustus. Enjoying the assumed academic label, he is now known as Dr. D. Hoy and, by mail order, sells the secrets of mental power to the unsophisticated and exploits the current irrational belief in the supernatural quite handsomely. Confronted with the morality of his actions, Hoy easily shrugs it off; and his fellow-conjurors rail against those who call attention to the truth of his actions.

My own personal opinion and declaration is clear: performers who use their abilities to perpetrate a fraud on their victims are due no sympathy, and by their actions become open targets. I am pleased to note that my colleague Milbourne Christopher and I are being joined daily by others who feel similarly. Fellow CSICOP-associate Bob Steiner is another crusader against the outright frauds of our profession, and our numbers increase.

Repeated appeals to organizations of conjurors in this country have

failed to elicit replies. The Society of American Magicians has recently amended its constitution to remedy, in theory, abuses by their members. Still, examples of such abuses abound, and the SAM takes little, if any, action. Magicians' groups in Sweden and Denmark have taken firm stands and have defended their strict rules against violators. In England, the Magic Circle, though its Occult Committee (set up to investigate fakes) is disbanded, continues to maintain its standards. But U.S. clubs have gone along shamelessly with the public taste for the irrational.

I recall that, many years ago, a onetime officer of the American Guild of Variety Artists (AGVA) in Florida invited me to share a bill with him there, but I dropped out of the contract after I discovered that he was doing "special readings" for black people backstage at very healthy fees—yet these same people were not permitted to sit with the audience downstairs in the theater. I do not recall that AGVA ever issued a memorandum on that situation, in spite of all the noise I made at the time.

The responsibilities are clear. Members of a profession should be able to discipline their own members, rather than having to be urged from outside their ranks. In the field of conjuring, there is much to be desired in this direction. In the vernacular of the profession, the act needs to be cleaned up. •

Editors and "clairvoyants"

The real mystery concerning the future is how these quacks [self-proclaimed psychics and clairvoyants] continue to receive so much time on radio and television and so much space in newspapers and magazines. Editors responsible for running them don't require them to name sources or explain their information as they do when reporters, without any pipelines to spooks, turn in mundane accounts of current events.

* * * * *

Gullible editors often give serious attention to orthodox magical tricks, such as the sealed envelope containing a prediction of the newspaper's headline, or the precocious horse able to count and do figures, or the mind reader able to dumfound even professional scientists. Several professional magicians, notably Harry Houdini and Joseph Dunninger, offered large rewards for anyone who could produce an effect that they couldn't duplicate. Nobody ever won the wager, but clairvoyants and other quacks continue to thrive. Their task is easier in periods of economic insecurity as the present when many people turn to the supernatural for comfort.

—Curtis D. MacDougall, Professor Emeritus of Journalism, Northwestern University, in his "Observations" column in the *Chicago Skyline*.

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Book Reviews

Science and Parapsychology: A Critical Re-evaluation. By C. E. M. Hansel. Prometheus Books, Buffalo, N.Y., 1980. 325 pp. $15.95.

Reviewed by Martin Gardner

Because books skeptical of parapsychology do not sell as well as books on the other side, publishers are understandably reluctant to take them on. It was something of an event, therefore, in 1966 when Scribner's had the courage to issue C. E. M. Hansel's *ESP: A Scientific Evaluation.* The book went out of print, but now Prometheus Books has reissued it under a new title, in an edition heavily revised throughout and containing several new chapters that cover recent ESP research.

It continues to be the best book survey of parapsychology, by a skeptic who finds psi research flawed by incessant failure to impose controls strong enough to rule out unconscious experimenter bias, or deliberate fraud on the part of subjects, experimenters, or both. After sketching the early history of psychic research, Professor Hansel—an experimental psychologist at the University of Wales—launches into a detailed examination of four classic ESP experiments that were long considered the best that modern parapsychology had to offer.

The first was the much publicized series of tests by J. B. Rhine's assistant, J. G. Pratt, with Hubert Pearce, then a divinity student at Duke University. When Hansel visited Rhine's laboratory and studied the raw data of this historic experiment, he found to his surprise an extremely simple way by which Pearce could have cheated. Did Pearce in fact cheat? The question is beside the point. The point is that neither Pratt nor Rhine saw fit to take the most elementary precautions to prevent Pearce from doing what he easily could have done. It is this kind of incredible carelessness that is at the heart of Hansel's trenchant criticism. "These experiments," he writes, "were not a first-year exercise. They were intended to provide conclusive proof of ESP and to shake the very foundations of science. If Pratt had some misgivings, there is no evidence that he ever expressed them."

Nor has Pratt since shown any misgivings about defects in the design of the second notable experiment discussed by Hansel, one in which Pratt was the observer for a series of tests by J. L. Woodruff, also at Rhine's laboratory. "In the entire history of parapsychology," Rhine declared, "no experiment has ever been carried out with such elaborate controls against possible error." Elaborate con-

trols? Hansel uncovered statistical anomalies in the data that are exceedingly hard to account for without assuming conscious or unconscious fudging on Woodruff's part. In 1974, R. G. Medhurst and Christopher Scott reported in Rhine's journal on their careful analysis of the original records. The results strongly confirmed Hansel's suspicions. Since then the Pratt-Woodruff tests have been under such a cloud that they are seldom cited by parapsychologists as the unassailable experiments they once were taken to be.

Hansel's third classic, the testing of Basil Shackleton in England by S. G. Soal and Mrs. K. M. Goldney, has met with an even direr fate. In his book's first edition Hansel gave powerful arguments for thinking that Soal had falsified his records. For this charge Hansel was unmercifully pilloried by Soal, Pratt, Goldney, and virtually every leading parapsychologist. John Beloff, of Edinburgh University, wrote in 1968 that after reading Hansel's criticism he still considered Soal's tests "the most impressive evidence we possess for the reality of ESP."

The final blow did not fall until ten years later, when Betty Markwick, a British statistician, found evidence that Soal had deliberately doctored his figures (*Proceedings of the Society for Psychical Research*, 56 [May 1978]: 250-281). The evidence was so incontrovertible that even Pratt admitted that all of Soal's findings must now be set aside "as lacking in scientific validity." As for his own papers on these tests, some written jointly with Soal, Pratt says they are now "marked to go to the dump heap."

Soal's book *The Mind Readers*, reporting his tests of the telepathic powers of two clever Welsh schoolboys, provides Hansel with his fourth classic experiment. Soal's book is so full of loopholes as to be almost a caricature of sloppy psi research; yet only one unfavorable review was published (by Hansel), and the book had the distinction of receiving the longest, most enthusiastic review ever given such a book in an establishment journal of psychology. Sir Cyril Burt, then editor of the *Journal of Statistical Psychology*, wrote: "It must, I think, be owned by every impartial reader that, alike for their success and for the care with which they have been conducted, the experiments here recorded are unrivaled in the whole corpus of psychical research." That was before 1976, when it was discovered that Burt himself had shamelessly forged the data in his famous study of the I.Q.'s of identical twins.

Hansel's new chapters cover such topics as psi research behind the Iron Curtain, the now-fashionable interest in Jungian synchronicity (which bids fair to replace the older notion of parapsychologists that psi operates by "forces" that go from here to there), the hilarious "thoughtography" of Ted Serios, experiments involving ESP in dreams, and the Stanford Research Institute's work on remote viewing and with such self-styled psychics as Uri Geller.

These new chapters contain several spots that I think Hansel might have altered slightly had he had access to John Wilhelm's eye-opening *Search for Superman*, and the new Prometheus book by Richard Kammann and David Marks, or had his manuscript been checked by a magician familiar with the techniques of modern psychic charlatans. It is not necessary, as Hansel states, to put a spoon or fork in a vise to prepare it for psychic bending. The preparation is easily done in the hands, holding the spoon under a table, or taking it to a washroom, though admittedly the spoon may get fairly hot if it is made of sterling silver or quality steel. It also is unnecessary, since the prepared spoon looks perfectly normal, to conceal the weakened spot by the fingers before demonstrating the "Geller effect." Nor is it probable that Serios had any method of producing his Polaroid photos other than by the simple optical device described by David

Eisendrath, Jr., in *Popular Photography*, October 1967.

These, however, are trivial criticisms of an excellent book that is sure to be bitterly denounced all over again by believers but which stands as a persuasive exposure of the gullibility of many top parapsychologists and their unwillingness to impose controls commensurate with the revolutionary character of their claims. It is a book that should make clear to any open-minded reader the long and lonesome road parapsychology has yet to travel before it is accepted as a science. "After 100 years of research," Hansel concludes, "not a single individual has been found who can demonstrate ESP to the satisfaction of independent investigators. For this reason alone it is unlikely that ESP exists." •

Exploring the Unknown: Great Mysteries Reexamined. By Charles J. Cazeau and Stuart D. Scott, Jr. Plenum Press, New York, 1979. 283 pp. $15.95.

Reviewed by Kendrick Frazier

This admirable book is remarkable in many ways. It is an extensive critique from a scientific point of view of scores of borderline science claims that fall generally into the scientific specialties of the authors. Few scientists have ever given so much of their time to such a book-length effort.

Cazeau and Scott are associate professors, of geology and anthropology, respectively, at the State University of New York at Buffalo, and most of the subjects they analyze fall broadly into those two fields. Both geology and anthropology deal with numerous fascinating topics that sensationalist writers have exploited and distorted. There has been little effective rebuttal from scientists who have the background to help the public sort out the fact from the fiction and the real mystery from the false mystery.

The authors' approach is low key and scientific, and what is especially praiseworthy is their remarkable patience and restraint. In many ways *Exploring the Unknown* exemplifies the highest ideals of scientific analysis of fringe-science claims and mysteries that attract wide public interest. Their treatment is free of emotionalism, name-calling, ridicule, and sweeping generalizations. Such pitfalls are understandably difficult to avoid when dealing with claimants who often maintain no reasonable standards of logical discourse or adherence to fact. But by avoiding them Cazeau and Scott keep the focus squarely on the factual accuracy or inaccuracy of the claims.

For each of the subjects Cazeau and Scott take up—from claimed runic inscriptions in New England, to the building of the pyramids, to Noah's ark and Bigfoot—they straightforwardly give examples of some of the claims made and then proceed calmly to analyze them. The emphasis throughout is on verified information and logical analysis. Their restrained approach then usually concludes with a clear statement of their judgment about the particular claim. This is in contrast to some persons who mistakenly believe dispassionate scientific analysis

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Kendrick Frazier, editor of the SKEPTICAL INQUIRER, *covered the earth sciences before and during his years as editor of* Science News.

means never arriving at a conclusion.

The writers understand the public's fascination with "those great mysteries of the earth that have captured the popular imagination." No one who comes to the book with an honest desire to learn what well-informed scientific thinking concludes has cause to be offended should their beliefs not be supported. "Our aim," say the authors in their preface, "is to lend a helping hand by examining the evidence that surrounds such mysteries... and, as logically as we can, sift truth from falsehood and exaggeration." That aim is admirably fulfilled.

The book is well designed and illustrated and, while not as breezily written as much of the popular literature it evaluates, it has the virtues of clarity and integrity. It deserves a wide audience. I am pleased to hear it will appear in paperback.

In their introduction, Cazeau and Scott define pseudoscientists as "those who have employed data and reasoning incorrectly to foster offbeat and often unfounded theories." This is as good a definition as any. Note that the distinction is in the approach (employing data and reasoning incorrectly) as much as it is in the content. There are correct and incorrect ways of dealing with offbeat theories, which can often play a useful role in science. The authors' emphasis on method spotlights the approaches of sensationalist writers and other noncritical disseminators of reports and legends and, by so doing, shows the reader how he or she is often manipulated in such writings.

Their introductory chapter is a valuable primer for assessing misleading information. They list 14 ways in which facts and logic can be abused and, as they do throughout the book, draw on the popular literature for abundant examples. In one passage, from a book claiming that the Maya had hidden in a secret tunnel "as yet undiscovered" a complete history of their alleged extraterrestrial origin, the authors find, in only six sentences, seven abuses: accepting hearsay as evidence, failure to specify, contradiction, acceptance of legend as fact, unsubstantiated conclusion, innuendo, and irrelevant conclusion. "There is not one substantiated fact offered in the entire passage. If one allowed oneself to be amused, it would be at the realization that there are no errors of fact in the entire passage because the entire passage contains no facts."

They also warn the reader against what they call *appeal to pity*, "depicting the author as pitting himself against the 'establishment' of orthodox science." That device is so common that it's almost a defining trait of the genre. Another is *false cause*, as when Charles Berlitz refers to a rock brought up from 1,700 fathoms as a lava that cools above water, implying that it formerly had been on the surface of an Atlantis continent that sank. The authors point out that the cause that determines the evolvement of the type of rock in question is the rate of cooling, not whether it was cooled above water.

Because Cazeau and Scott so painstakingly take the reader through the evidence for and against a claim before offering any conclusions, it's almost a disservice to mention some of their conclusions here. Maybe I can give a little of the flavor of their approach by taking a few items from their section on Atlantis. First, they note that geology has found no evidence that an entire continent within the geologic past—let alone within the geologic yesterday of 12,000 years ago—was thrust down into denser rock with breathtaking swiftness. Such a catastrophic sinking would have caused worldwide sea-levels to rise virtually overnight and created stupendous waves. Geologic study of the world's shorelines shows no such evidence. Furthermore, the Atlantic sea-bottom, beneath the sediments, is oceanic basalt, not continental granite. Also, the presumed site of Atlantis has been probed

to some extent. Underwater TV cameras show no exotic artifacts. Manned underwater vehicles have found no Atlantean constructions. Deep-sea cores have found the submarine topography to be quite unlike the topography of Atlantis described by Plato, with delicate layers of sand, silt, and clay undisturbed during tens of thousands of years of accumulation. They conclude that geology "offers no evidence" that Atlantis ever existed in the North Atlantic, the classic location. They then do the same with archaeology. They show that archaeology has found no evidence of any "Atlantean" culture, such as indications of trade with Babylonians, Sumerians, Egyptians, or others. Further, "Not one document unearthed by the archaeologist in cultures of Plato's time or before specifically mentions Atlantis or any reasonable facsimile thereof."

Cazeau and Scott gently conclude that "it does not seem reasonable, if Atlantis existed and died dramatically, that the sole source for the memory of such a cataclysm would be one man (either Plato or his ancestor, Solon)." They find psychological rationale for the promulgation of the *legend* of Atlantis (but no evidence for its *factual* existence) in both the catastrophic explosion of Thera (Santorini) in the Aegean Sea and the slow general rise of sea levels since the last glaciation, which would have gradually submerged coastal settlements and given rise to legends of worldwide floods.

One of the more interesting sections is the authors' analysis of the claims and methods of Barry Fell (author of *America B.C.*). Here their own first-hand observations effectively reveal the deficiencies in Fell's arguments. For example, Fell and the owners of Mystery Hill, a complex of ancient stone structures in New Hampshire, claim that cleavages in the shape of X's in a metamorphic rock are a carved Roman numeral 30. "They are not," Cazeau and Scott state. "Close examination shows that they are not superficial traces, but extend through the entire rock." The so-called Eye Stone is claimed by Fell to be the inscription sign of the eye of the sun-god Bel. Not true. "The 'eye' is actually a natural feature of granite injection, made somewhat more pronounced by differential weathering." A claimed inscription interpreted by Fell to be the sign of Iberian visitation to the New World "appears to be a fake," say the authors. The rock's naturally weathered surface is dark brown; the inscriptions are a fresh light tan, a condition that should be lost in less than a century. To Fell's objection that the inscription was face down and thus protected, Cazeau and Scott point out that chemical weathering takes place in the presence of water whether or not the surface is exposed to the air, and water is abundant in Virginia, where the rock was found. They conclude that the inscription is modern. "The reading of *America B.C.* reveals fallacies of false assumption, failure to specify, and speculative argument," they say. "Rather than try to disprove early European and Near Eastern contacts with America, we question Fell for concluding too much from too little."

Onward in this clear-headed vein, the authors resolutely take up one by one many of the offbeat and popular claims surrounding writings on ancient astronauts, UFOs, Stonehenge, the building of the pyramids, Easter Island, the Bermuda Triangle, monsters, astrology, and Velikovsky. For the most part they carry out their own literature surveys and analyses of the facts and arguments rather than repeating those of other critics, a valuable contribution that reinforces the earlier criticisms.

Always evident are clear thinking, appeal to facts versus hearsay, an ability to make distinctions, and an absence of rancor, combined with a willingness to offer judgments—and all this with good scientists' undiminished curiosity and love of the

mysterious.

Their section on the elusive Bigfoot is especially interesting in this regard, perhaps because so little truly independent, nonproponent analysis is on record. The photos offered as evidence are, they note, "blurry and indistinct." They have seen the famous 1967 Patterson film several times. "The question boils down to whether or not the large, hairy creature is real, or a man in a specially made-up suit. The creature moves like a human, in our opinion, but that does not mean it is a fake."

Their summary of this section is typical of their approach throughout: "We are not saying that Bigfoot exists or does not exist. We do not agree... that the evidence is necessarily additive. Fuzzy photos added to recorded noises from a forest do not make a Bigfoot. Several weak links do not make a strong chain. We also disagree with those who maintain that the scientific community airily dismisses the entire subject as 'nonsense.' If we can speak as members of that scientific community, hard evidence *is* important, and there is very little of it, if any. So much of the evidence boils down to unverifiable reports, some of which are no more than vague gossip, vague discriptions, and wishful thinking."

Yet Cazeau and Scott are not negative nay-sayers (and neither are most other critics of fringe-science claims). They end their litany of deficiencies in the proffered Bigfoot evidence by saying, "However, there is sufficient evidence for us to believe these investigations should continue. Scientists are attracted to the mysterious and unknown as much as anybody."

That theme forms their final words in *Exploring the Unknown*: "We lament the homage accorded to those mysteries so amenable to solution by logic and clear, critical thinking. Yet the day when all genuine mystery is dissipated, if such a day could ever come (and we doubt it), would be equally lamentable, for it has always been the attraction of mysteries, and the overwhelming urge to solve them, that has carried mankind from Stone Age campfires to exploration of the planets."

Exploring the Unknown belongs on the bookshelf of everyone who has an attraction to these mysteries or a concern with public misperceptions about them. It is a superb book, one deserving to be the forerunner of similar treatments by scientists in other fields. •

Search for the Soul. By Milbourne Christopher. Thomas Y. Crowell, New York, 1979. $9.95.

Reviewed by James Randi

With his expected scholarship and attention to detail, Christopher has provided us with yet another reference work, this time gathering an impressive amount of material on that most ubiquitous of questions, "Is there life after life?" Beginning with the case of the unfortunate Sir William Crookes, whose scientific objectivity was abandoned when he was charmed into belief by three teen-aged spiritualist mediums, and ending with the currently popular declarations of Elisabeth Kübler-Ross on the subject of survival, the author leaves few points untouched in between.

Crookes, along with his close friend Sir Oliver Lodge, a firm believer in the

wonders of the seance room, offered the most outrageous rationalizations for the obvious frauds that were eventually exposed as such. When Florence Cook changed clothes behind a screen and emerged again as the spirit form known as Katie King, Crookes was moved to embrace her rather enthusiastically, and has hinted broadly at other intimacies that he dared not detail. Unfortunately, at the time Christopher's manuscript was beyond additions, the news broke that Kübler-Ross was also in the habit of attending seances in which hanky-panky of a very earthy nature was known to take place and that she was able to rationalize away the discovery of her favorite medium, still adorned in his turban, stark naked in suspicious attitudes before the assembled sitters when a light was suddenly switched on. Nothing changes but change itself.

Perhaps we could have obtained more value from this book if the author had chosen to express more personal opinions, which he does rarely, and then only when it involves his specialty of conjuring. His reticence, when such observations could do much to inform the reader, is regrettable.

Skeptics are often hard put to answer questions concerning such apparently well-authenticated mediums as D. D. Home, Palladino, and the famous Mrs. Piper. With the information in *Search for the Soul*, that difficulty is overcome. Here is a detailed and scholarly attack on the claptrap of spiritualism and those who have attempted to prove the existence of life after death by trickery.

Well done, too, is Christopher's account of the more legitimate endeavors along this line, particularly, the serious attempts to measure that elusive entity known as the soul. Though one is repelled by the thought of smothering mice, cats, and dogs to make such tests, it is nonetheless satisfying to know that it has been done. Still, the results are negative.

Although supplied with an extensive bibliography, as is usual with Christopher's works, this book needs an index of a more extensive nature.

The search that is the subject of this book has not been successful. Says Christopher, in closing his book, "The soul continues to be, as some of the 'primitive' peoples of the world have described it, as invisible as the aroma of a flower and as elusive as the wind." •

The Ion Effect. By Fred Soyka with Alan Edmonds. Bantam Books, Des Plaines, Ill. 163 pp. $2.25.

Reviewed by Warner Clements

The Ion Effect is interestingly written, as are many books on flying saucers, the Bermuda triangle, and other such topics. But like many of these books, this one abounds with errors and contradictions that discredit it in the eyes of a scientifically trained reader. For instance, the author asks us to believe that suspending rats clear of contact with the ground cured them of cancer (p. 77). And if we believe this, he asks us simultaneously to believe that we should all take pains to ground ourselves electrically for the sake of our health (pp. 120-121).

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There are plenty more gems of the same sparkle. For instance, it is alleged that plants in a Faraday cage will grow to only half normal size (p. 139). This will be news to all of those home gardeners who have successfully grown plants in cylinders of fence wire to protect them from animals and also to thousands of commercial growers who have somehow made do through the years with their greenhouses of glass set in steel framing, which makes them excellent Faraday cages.

Elsewhere in the book it is related that rats and guinea pigs were found to die if compelled to breathe only deionized air. And it is specifically concluded that death or serious illness will ensue for "any organism" similarly treated. This means that I should be dead; for if there is any such thing as a completely deionized gas, it is gas fresh from a metallic container. As a former pilot in military service I breathed pure oxygen almost directly out of a tank for periods totaling at least 500 hours. Similarly, divers have survived under water, for days at a time, breathing canned helium and oxygen.

Further on his way to convincing the reader, Soyka manages to thoroughly mangle the science of electrostatics: by giving credence to the theory of a Dr. Maxey that the electrical field within the cockpit of an all-metal aircraft can be altered by electric conditions exterior to the aircraft (Chapter 10); by, throughout the same chapter, making such distinctions between charge and electrostatic field as to display complete ignorance of the connection between the two phenomena; and by being willing to credit Dr. A. P. Krueger with the discovery of electrostatic precipitation (p. 79), apparatus for which has been around longer than Dr. Krueger has.

Meteorology is similarly mangled, for example, by the statement: "The weather changes when one atmospheric front is shoved out of the way by another" (p. 21). Nor does geophysics escape. There is a remarkable statement about the full moon pushing down the ionosphere. (In actuality, any effect of the moon is negligible compared with that of the sun, as any radio amateur can testify.) Embarrassingly, the talk about the moon doesn't end there. It gets into discredited beliefs about the full moon affecting the success of surgery, the time of birth of babies, and so forth. In fact, nothing seems too far out for Soyka. We have ions scooting into the skin at acupuncture points. We have even Kirlian photography and auras.

But perhaps all this is mere quibbling. It certainly is that if, in the end, Soyka can be sustained at least on his main points. What are these main points? They appear to be, first, that negative ions are the good guys and positive ions are the bad guys (p. 21); and, second, that the mechanism through which the good guys exert their benefits is the diminution of the production, in the body, of the neurotransmitter serotonin (p. 29). Regarding the many experiments that have been designed to test these theories, it can correctly be stated that the results have been provocative. But it is completely in error to call them, as Soyka does, conclusive; they are anything but that. I don't know whether there are "5,000 scientific documents" on the subject, as Soyka claims. (The number may have been pulled out of a hat. The book cites only 52 references, groups of which come from the same sources.) What I do know is that they do *not* all support the claims made in the book. In fact, even one of Soyka's heroes, the late Dr. I. H. Kornblueh, is significantly at variance with him. For Kornblueh held that negative ionization is most effective when administered intermittently, not continuously, i.e., in doses, like a drug. Soyka, on the other hand, regards negative ionization as the proper environmental circumstance, which must be preserved at all times as shelter from those naughty and unnatural "pos-

ions."

More to the point, one can cite the work of Dr. Allan H. Frey, who found that the positive ions are the *good guys*. Dr. Frey, then with General Electric, worked for two years on the matter, using live human subjects, not plants or guinea pigs. I quote from *Science News Letter* for July 7, 1962: "Dr. Frey's experiments indicate that the positive ions are the valuable ones and the widely used negative air ions are perhaps harmful."

Dr. Krueger, referred to earlier, is, of course, the originator and principal champion of the serotonin-suppression idea, the most cited application of this idea being the understanding and treatment of migraine headaches. Yet here again expert opinion is not unanimous. From more recent research, Dr. Federico Sicuteri of the University of Florence reports that evidence is mounting for the conclusion that migraine is due to a *deficiency* of serotonin in the brainstem. So there you have it. Krueger says migraine is caused by too much serotonin; Sicuteri says it is caused by too little. I wouldn't presume to referee these two experts. I would merely point out that a point so disputed can scarcely be regarded as settled.

I first got interested in air ionization in about 1956. I built and experimented with crude apparatus for measuring ions and generating them. I was unable to note or achieve any mood or health results in myself or a smattering of subjects. My dawning skepticism grew when I noted that the spate of magazine articles on the subject that appeared at about that time seemed to betray that preparations were being made within the bowels of a couple of large corporations to introduce ionizing equipment to the consumer market. The research itself suffered from the same taint. For instance, Dr. Kornblueh, who did the still much cited work on burn recovery, worked for Philco, one of the companies referred to.

But regardless of who sponsors research in this field, it is difficult to regard any results as conclusive; there are just too many variables to deal with. The air we breathe affects the way we feel through its temperature, its humidity, barometric pressure, how fast it is moving, and, not to be neglected, the chronology of all these factors. There is a lot there to sort out.

Take the matter of dust, for instance. Let us agree that a good air ionizer can precipitate indoor dust. Then who is to say that the benefits of ionization, if any are observed, are not due to the absence of dust rather than to the presence of ions? In this connection, I have seen it alleged that Dr. Kornblueh used to rush into the hospital rooms of his controls, but not those of his ionized subjects, and make sure that the windows were open. He may or may not have believed that dust is a factor retarding burn healing, but apparently he took no chances.

And then there is ozone. I find no mention at all of ozone in Soyka's book. But so far as I know, there is no way to generate air ions that doesn't also simultaneously generate ozone. There are ways to keep the ozone down, but none to eliminate it. Historically, the benefits nowadays attributed to ionization were first noted in the vicinity of ozone generators.[1] Such generators appeared in hospitals, restrooms, and elsewhere, where they were used to kill odors and "germs." In view of the fact that ionizers are credited with being able to do the same jobs, can it not be appreciated that ozone incidentally generated by the latter devices may deserve some of the credit?

But ozone is toxic. This was one factor in the demise of a whole crop of consumer-type air ionizers due to make their debut at the end of the 1950s. (All were stillborn or quietly put to death at the urging of the FDA.) The current crop is being marketed by much smaller companies than those involved earlier, companies that

perhaps have less to lose. Or more to learn.

NOTE

1. Ozone generators, in the 1930s, had a career interestingly parallel to the present one of ion generators. Wild health-claims were made for them. Quack doctors gave "ozone treatments." Fortunately, there was never a boom, possibly because most people found the odor disagreeable. •

UFOs: A Pictorial History from Antiquity to the Present. By David C. Knight. McGraw-Hill, New York, 1979. $12.95.

Reviewed by Philip J. Klass

Were someone to offer a prize for the worst, most nonsense-filled book on unidentified flying objects ever published, there could well be more than a hundred contenders. Probably the most expensive of these would be a new book entitled *UFOs: A Pictorial History from Antiquity to the Present*, by David C. Knight.

The book opens with a modern artist's rendition of Ezekiel's fiery chariot—shown as a familiar flying saucer. Jacob's dream of a heavenly ladder, also rendered by a modern artist, becomes a ladder extending down from a flying saucer that is being boarded by a stream of UFOnauts.

Then Knight proceeds to show some of von Däniken's favorite Pre-Columbian art from Central and South America, which von Däniken suggests is intended to portray extraterrestrial visitors. If von Däniken's hypothesis were correct it would be obvious that the Pre-Columbian extraterrestrial visitors were a different breed from those described by recent-vintage "UFO abductees."

Next the book introduces its readers to the late-nineteenth-century reports of "mysterious airships," with an artist's sketch to illustrate the story told by Kansas farmer Alexander Hamilton that he witnessed a mysterious airship abduction of one of his heifers, which then was slaughtered aboard the craft and its unwanted parts dropped to earth. Knight reports that 11 prominent citizens signed an affidavit expressing confidence in Hamilton's account. But Knight does not mention that a Kansas newspaper editor, E. F. Hudson, some years later publicly admitted that the incident was a hoax in which he was a participant.

Knight cautions readers, in the book's Introduction, that "many of the 'UFOs' pictured herein are fakes, misidentifications, or the results of accidental, poor, or defective photography. Therefore readers are advised to take the time to read this volume from start to finish"—that is, to read the photo captions.

Consider the caption beneath two famous UFO photos taken off the coast of Brazil in 1952. Knight quotes from the report of the University of Colorado, following its government-funded UFO study, which said of the Brazilian photos: "This case has been presented as one of the strongest and demonstrably 'genuine'

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flying saucer sightings." End of quote. The very next sentence in the University of Colorado report, which Knight omits, says: "It contains an obvious and simple internal inconsistency, which is pointed out by D. H. Menzel and L. G. Boyd."

Or consider his caption for another series of UFO photos, taken in broad daylight near the heavily traveled Santa Ana, California, Freeway in 1965, which purport to show a giant saucer-shaped craft hovering nearby, seemingly unnoticed by the drivers of the many cars that can be seen moving along the freeway. Knight quotes the University of Colorado report as saying that this photo-case is "of exceptional interest because it is so well documented." The full quotation from the report reads as follows: "Although the authenticity of the UFO in this case is still open to question, owing to internal inconsistencies in the early testimony [by the principal] and inconsistency of the photographs and weather data, this case is still held to be of exceptional interest because it is so well documented."

Knight devotes two pages to UFO photos taken in early 1967 by two teen-age brothers in Michigan. He says that J. Allen Hynek (currently director of the Center for UFO Studies) "was impressed with the photos and thought the chance of a hoax having been perpetrated was 'unlikely.' " That indeed was Hynek's appraisal, as expressed in a long interview published in the *Detroit News* shortly after the incident occurred. (Because of serious inconsistencies in the boys' story and the photos, I termed the photos a hoax in my book *UFOs—Identified*, published in 1968.) Had Knight bothered to check with Hynek while preparing the book, he would have learned that the two young men from Michigan, nine years after the incident, wrote to Hynek to admit that the photos were hoaxes.

Included in the book is a photo of Earth, taken by Apollo 11 astronauts en route to the moon, that shows an irregular blob of white material at the extreme right. Knight calls the photo "perhaps the most spectacular of all UFO sightings from space." Detailed investigation into this and numerous other claims of UFO sightings by astronauts, conducted by James Oberg, indicates the white blob is a nearby out-of-focus piece of insulation or ice fragment, which the astronauts reported seeing at the time. (See Oberg's article: "Astronaut 'UFO' Sightings," *SI*, Fall 1978.)

Knight quotes astronaut Neil Armstrong aboard the Apollo 11 as saying the UFO looked "like an open suitcase," which the white blob does not resemble at all. Oberg, who has examined the transcripts of astronaut conversations at the NASA Johnson Space Center in Houston, where he is employed as a computer systems analyst, found that Armstrong used that description the following day to describe the appearance of the spent S-4B rocket-stage that was trailing them on the way to the moon.

Another photo in Knight's book bears the following caption: "When Radio Officer T. Fogl [actually Z. T. Fogl] aboard the S. S. *Ramsay* out of Vancouver spotted this UFO about 2:30 one afternoon in 1957, it was too far away for a good picture—about a mile from the ship. Eventually the disk came near enough and Fogl took this, and later another, picture. The object was seen to have a flat dome, no ports, was silver and black and had tripod-like protuberances on its underside. Moving very slowly, the UFO stayed with the ship for a few minutes, then shot off with great speed toward the California coast."

The Fogl photo was widely accepted as authentic by UFO proponents in the late 1950s and early 1960s, until Fogl publicly admitted in the mid-1960s that the pictures were hoaxes. Fogl's admission was publicized by the widely read British magazine *Flying Saucer Review* in the fall of 1966. When a UFOlogist named

Ralph Rankow wrote Fogl to ask why he had perpetrated the hoax, Fogl responded with comments that constitute an appropriate review of the book Knight would write more than a decade later. Fogl said he wanted to demonstrate "that certain people make utter fools of themselves. Far too many people make a racket of the UFO business—writing phony books supported by faked pictures."

Considering the tens of billions of still photos that have been taken since the modern UFO era began more than three decades ago by millions of persons who own cameras, including pictures of brief, unexpected events such as meteor-fireballs and aircraft accidents, Knight's book is an illuminating work, although not as the author intended. *UFOs: A Pictorial History from Antiquity to the Present* contains not a single UFO photo with sufficient credentials to impress the "World of Science." And it would take only one! •

Analyzing UFO claims

UFOLOGICAL PRINCIPLE # *1: Basically honest and intelligent persons who are suddenly exposed to a brief, unexpected event, especially one that involves an unfamiliar object, may be grossly inaccurate in trying to describe precisely what they have seen.*

UFOLOGICAL PRINCIPLE *#4: News media that give great prominence to a UFO report when it is first received, subsequently devote little if any space or time to reporting a prosaic explanation for the case when all the facts are uncovered.*

UFOLOGICAL PRINCIPLE *#6: Once news media coverage leads the public to believe that UFOs may be in the vicinity, there are numerous natural and man-made objects which, especially when seen at night, can take on unusual characteristics in the minds of hopeful viewers. Their UFO reports in turn add to the mass excitement which encourages still more observers to watch for UFOs. This situation feeds upon itself until such time as the news media lose interest in the subject, and then the "flap" quickly runs out of steam.*

UFOLOGICAL PRINCIPLE *#9: Whenever a light is sighted in the night skies that is believed to be a UFO and this is reported to a radar operator, who is asked to search his scope for an unknown target, almost invariably an "unknown" target will be found. Conversely, if an unusual target is spotted on a radarscope at night that is suspected of being a UFO, and an observer is dispatched or asked to search for a light in the night sky, almost invariably a visual sighting will be made.*

UFOLOGICAL PRINCIPLE *#10: Many UFO cases seem puzzling and unexplainable simply because case investigators have failed to devote a sufficiently rigorous effort to the investigation.*

—From *UFOs Explained* by Philip J. Klass (New York: Random House, 1974)

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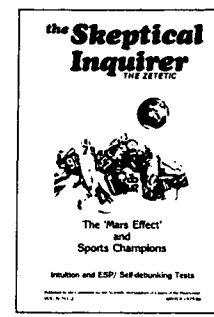

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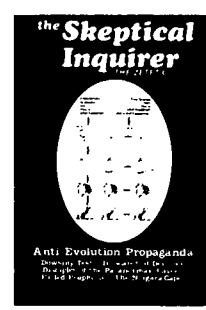

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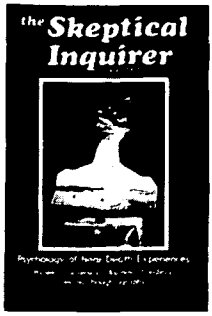

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Follow-up

Examination of the Claims of J. Randi and S. Cottrell

The report by James Randi on the claims of Susie Cottrell (*SI*, Spring 1979) permits several inferences other than the one proffered by him, but I will omit discussion of these for the moment in favor of focusing on a somewhat different type of approach to the Cottrell claims from the one employed by Randi and his collaborators. Here I will say only that the tests described by Randi, and a good part of his discussion, were based largely on the type of procedure demonstrated by Susie in her appearance on a Carson "Tonight Show."

It can be said without hesitation that no parapsychologist would even attempt a test of Susie's claims based upon such procedures. No parapsychologist, at the same time, would be impressed with Randi's *account* of what went on in Susie's appearance on the Carson show. Unless Randi, as well as the people he claims have supported his account from their videotapes of the show, saw an entirely different version from the one I saw (on tape), his statement that "the ace of spades [was] on the bottom of the deck as Ed McMahon shuffled it" is somewhat imprecise if only because McMahon did not shuffle the deck, Susie did. Moreover, Susie was (and is, on tape) definitely not seen "kneeling down at the table to get a better peek" at "the ace of spades at the bottom of the deck." Since she was shuffling standing up she did have to bend slightly from the hips to do this, but peeking would have been quite unnecessary since every experienced card handler *knows* that the ace of spades is the bottom playing card of new standard Bicycle poker decks. According to the version of the Carson show I saw, furthermore, Susie did not ask "*four* people at the table to select *five* cards each," as Randi has it (his italics), thereby giving her "20 chances out of 52 of her force-card being selected as she manipulated them about," but asked each of four persons to draw *two* cards each, thereby providing only 8 chances out of 52 for the target card to be selected.

It is my impression that a number of things that took place on the Carson show did not go as Randi insists they did or must have. This may well be beyond reviewing at this date (although perhaps not). In any case, I would like to report several things from my own and others' experiences with Susie that do not lend

themselves easily to the type of interpretation favored by Randi.

I happened to be one of the seemingly few persons who did not see Susie on the Carson show at the time it was aired. I soon heard about her performance, however, and invited her to look me up should she ever get to Denver. (She was a student at the University of Kansas.) This she did when she and her father stopped over in Denver, en route elsewhere, on the day before Thanksgiving 1978. In an impromptu performance at the Biofeedback Department of the University of Colorado Medical School (which has since become part of the University of Colorado Health Sciences Center), Susie demonstrated for me and Thomas H. Budzynski, assistant director of the department, what appeared to be an unusual physiological indicator of paranormal cognition. We were sufficiently impressed to invite her back for further investigation.

Susie made two trips to Denver for this purpose in the winter of 1979. Out of a group of several playing-card calling procedures claimed by Susie to produce normally inexplicable results at a significantly higher than chance rate, two were subjected to formal testing. The first was the naming of a card that would be selected by someone other than herself from a deck spread out face down. The designation of this card, Susie claimed, could be done either by herself or someone else. (This was the alleged ability to which Randi and his collaborators addressed themselves.) The second procedure was the signaling by a change in her electronically monitored skin resistance when a designated card would be pulled by someone else from a spread-out face-down deck.

The procedure we used to test the first claim was quite different from the one employed by Randi and his collaborators. We programmed an HP-97 computer to provide pseudo-random numbers from 1 through 52. When this was activated, the numbers that came up determined:—(1) how the target card was to be designated—by Susie, by someone designated by her to do this, or by the computer itself, the latter either prior to or following the shuffling and selection procedures; (2) whether Susie was to observe or not observe the selection process; (3) the number of revolutions per minute, 16 or 33, of a 21-inch turntable platter on which the shuffled deck was dispersed and from which the selection was made.

Three numbers provided by the computer determined who did what on these steps. When Susie was not to observe, she simply turned on a swivel chair so that she faced away from the table on which the cards were spread out and into a completely draped corner of the room about two feet away. At no time did she touch the cards, during or prior to any trial. Fresh decks of standard Bicycle poker decks were provided at intervals. The shuffling was always hand done by me or others. This was followed on each trial with a machine shuffle before dispersal of the deck (by me or others) on the moving turntable. A person from a revolving volunteer pool was then designated to select five cards from the turntable. One of these was turned up to see whether or not it corresponded (or, in the case of post-trial designations by computer, *would* correspond) to the target card. All sessions were continuously videotaped by two cameras.

On 113 trials over several sessions where the target designation was made prior to the card selection, 2.17 hits could be expected by chance. Six were observed, yielding a probability of .035, or odds of about 30 to 1 that the results were not due to chance. On 44 control trials, where the target cards were designated *after* the selections had been made, 0.85 hits could be expected by chance. One was observed. This was within chance expectation (as expected). In all 6 successful trials the dispersal of the cards on the turntable was done by me, following the hand and

machine shuffles. Four persons other than me (and Susie) selected the cards from the turntable. On 2 trials, as dictated by the computer, Susie was visually shielded from the proceedings. There were 4 hits at 16 rpm and 2 at 33 rpm.

The testing of the second claim, that a change in Susie's skin resistance could be observed when a designated card was pulled by someone else from a spread-out face-down deck, was done at irregular intervals over the several sessions during which the first claim was also being tested. An electrodermal response (EDR), also known as galvanic skin resistance (GSR), is generated by increasing autonomic nervous system arousal and is measured by conductance. In our tests it was monitored from two fingers of Susie's left hand. In each trial, pseudo-random numbers from 1 through 52 generated by the HP-97 computer again determined how the target card was to be designated (by Susie, by someone designated by Susie to do this, by the computer itself), how the person to be the card selector was to be designated (by Susie, by computer, through volunteers), and whether or not Susie was to observe the proceedings. When she was not to observe, she again swiveled around to face the nonreflecting drapes while shields were placed between her and the monitor meters. The proceedings were again continuously videotaped by two cameras. Susie touched the cards only once during the 15 trials carried out. This was prior to a trial that she then did not observe. In all trials the deck was again hand and machine shuffled and dispersed face down on a bridge table by someone other than Susie (and in only one instance by a person who handled the cards in the selection process). In each of the 15 trials the person designated to be the selector drew the cards one by one from the shuffled deck lying dispersed face down on the table, keeping his fingers on the card until a meter-reading had been done and then leaving it face down on the table in one of two piles. Dr. Budzynski read the meter. After all 52 cards had been run through, a second round would begin with the small number of cards that had been placed in the positive-response pile. This process continued until there was only one card remaining that had produced a response. This card was then turned over to determine whether or not it matched the target card.

There were 8 hits (on 8 different target cards drawn by 6 different selectors) out of 15 trials. The probability of this being due to chance is 10^{-10}. If we elect to count only the 2 hits obtained on the 5 trials in which Susie was visually shielded from the proceedings (where the expected hit number is about 0.1), the probability of this being due to chance is less than .004 (or about 250 to 1 against). All statistical evaluations were made by Donald W. Stilson, professor of psychiatry and biometrics at the University of Colorado Health Sciences Center.

Unfortunately, our investigation of Susie Cottrell came to a standstill after a few sessions. This was in no sense optional stopping or due to any dissatisfaction on our part with Susie, who was entirely cooperative throughout and offered no objection to our experimental ploys (one of which, at least, the turntable idea, was completely new to her). The reason our work went no further, I believe, is that I had outlined to Susie a plan of continued investigation that might have taken several years and would have involved her in being tested by teams at five or six universities, two of which I was already in negotiation with. (According to the plan, each of these teams, adhering to the testing procedures used by us, would feed the data obtained into a master computer bank. It was hoped that with a large enough number of trials reliable inferences could be drawn about the 16 conditions being tested.) Neither Susie nor her family, I think, were thrilled at the prospect of such an arduous program. (Susie, I know, is more interested in furthering her wish to work

with autistic children, and from what I observed of her work with them during her time in Denver, and from what I have heard from a physician in whose clinic she worked with them in Kansas, I have little doubt that this is her true vocation.)

If, at any rate, we accept the extra-chance interpretation of the results we did get, it can be concluded that these results either are or are not normally explicable. If the former, they may be presumed to have been produced either by Susie or by one or more of the investigators or co-investigators. It is my belief that the very nature of the proceedings in the first type of test, and the safeguards employed in the second, were adequate to prevent Susie from producing these results (or at least those in excess of chance) entirely or to any significant degree by normal means. (A nick or some other mark on the card could conceivably have been produced by Susie in the one instance she touched the cards prior to one trial in the EDR test, but it would be difficult to see how, under the circumstances of the other trials, she could have put an identifying mark on seven others, two of which she could not have seen during the selection process in any case.) We are left then with the supposition that these results may have been normally produced by one or more of the investigators or co-investigators. That there is no defense against such a possibility I readily admit, since the amount of rigging of the procedures employed, or, at the very least, doctoring of the records, would clearly not be beyond accomplishment.

But the same necessarily holds in the case of Randi and his collaborators. What gives such a consideration a certain pertinence here (quite apart from the fact that virtually every sentence in Randi's report reeks with an almost self-congratulatory adversary bias) is the abnormally high rate of failure reported when the controls on Susie were tightened up. According to Randi, when Susie tried to predict "which persons would select the highest cards in a simple dealing of the pack," she failed 80 out of 80 times. "In another set of 104 tries at predicting cards to be turned up . . . she scored zero. A following set of 40 predictions failed 100 percent." Now it is the most naive of errors (and one I would hardly have imagined Randi—and certainly not Martin Gardner, his chief collaborator—to be capable of) to suppose that when measures are introduced into the testing to obviate trickery (and in the absence of anything paranormal) the scoring rate plummets to zero. There is, after all, an expected rate of success due to chance alone. Assuming that in all of the 224 trials mentioned the probability situation was again 1 in 52 (the type of situation Randi referred to repeatedly in his report), a simple calculation shows that the expected number of hits due to chance alone would be a little greater than 4. Another calculation tells us that the observed deviation from this expected number would be expected by chance only once in about 100 times.

Here too, then, if we assume the extra-chance nature of these results, we are again left with two possibilities: a well-known type of paranormal effect (psi-missing) or the rigging of the data.

Of course it is always possible to assume, I suppose, that Susie's scoring at zero did represent a chance effect, one simply of a highly improbable nature. Or that I am evaluating the situation on the basis of insufficient information. As to that, I am merely going on the basis of what Randi reported.

—Jule Eisenbud
Denver, Colo.

James Randi responds in the following article.

Examination of the Criticisms of J. Eisenbud

The forgoing critique of the CSICOP examination of Susie Cottrell's claims to paranormal powers and the description of Dr. Eisenbud's own experiments with her serve as excellent examples of the thinking employed by some parapsychologists. Note that Eisenbud depends upon complicated, many-faceted, and variable procedures heavily instrumented to give the impression of "scientific" attitudes and procedures. The true approach of science is one of minimal materials and simplified protocol accompanied by rigorous control and careful reporting.

Eisenbud is the investigator who catapulted former miracle-worker Ted Serios to fame with his "thoughtography," a process by which Eisenbud actually believed the ex-bellhop could project pictures onto Polaroid film using his mind. In his book *The World of Ted Serios*, Eisenbud related how he let the performer lead him about by the nose through a series of incompletely reported and expensive tests that showed two things: (1) Eisenbud could not solve the Serios trick, and (2) Serios had parlayed a simple trick into a miracle. One has ample reason to suspect that Cottrell had these same advantages when Eisenbud tested her.

Concerning his statement that "no parapsychologist would even attempt a test of Susie's claims based upon... the type of procedure demonstrated... in her appearance on a Carson 'Tonight Show,' " Eisenbud loses sight of one basic fact. In testing Cottrell, we were aware that a large part of her then considerable reputation was based upon what she had done on that Carson appearance. Indeed, her other shows for parapsychologists consisted largely of just that trick; and we knew that if we failed to test her on that, we would be accused of failing to answer to that challenge. Furthermore, we specifically asked Cottrell to suggest what tests she would do best at, confident—correctly, as it turned out—that we would be able to detect any trickery on her part. We did this to avoid criticism that we had imposed unusual and difficult controls on her. But, as was expected, *any* procedure we used was damned by the parapsychologists—because not only were negative results obtained, but cheating was proved.

Cottrell's procedure, as seen on our videotapes, was to ask the person or persons drawing cards to "choose some" and then stop the selection ("that's fine") when the desired one was chosen. On the Carson show, as soon as Ed McMahon had the glimpsed card in his hand, she stopped the selection. Her usual procedure was to have the subjects take five cards, "like you were playing a game"; and in my account—I admit I was in error—having seen so much videotape, I carelessly mixed two events.

Eisenbud's tests, by his own admission, were suggested by Cottrell herself, much as we had allowed. Without seeing the tapes that were made at that session, it is not possible to determine just what conditions prevailed. As with Eisenbud's previous work in this direction, there doubtless are many "unimportant" details omitted or unnoticed. We may never know. When we read, from the account, that "Susie touched the cards only once"—when the rules called for her *not to touch the cards, ever*—we wonder why. But familiarity with the usual parapsychological protocol brings understanding of this otherwise serious breach of the rules. I can assure Eisenbud that, during the CSICOP procedures with Cottrell, she adhered to all the rules, in spite of her tentative moves to violate them. The procedure is called "control."

It is almost amusing to see the variety of conditions that obtained during

Eisenbud's tests of Cottrell. He had purposely arranged for such diversity by programming the computer for such conditions. We do not see a simple, direct set of understandable and easily followed procedures designed to test her but, rather, a complex and puzzling variety of "musical chairs" games. But again, such methods are common to the field and accepted by the paranormalists.

As further evidence of Cottrell's qualities, Eisenbud points out that she "offered no objection to our experimental ploys" and that the turntable idea was completely new to her. What right had the subject to object to *any* method of protocol? If she *had* objected, would Eisenbud have used another method? *Did* she object to *any* procedure or make helpful suggestions to assist in the design of the protocol? Again, knowing the control Ted Serios had over his tests, one wonders.

Eisenbud disturbs me when he bares his chest in stating that "there is no defense against such a possibility... that these results may have been normally produced by one or more of the investigators or co-investigators." If, as he claims, *continuous videotape records* are available of the tests he conducted, is not the proof there? We assume, of course, that, as in the CSICOP tests, the records *are* continuous. On our tapes, doctoring of the records, the possibility of which Eisenbud also admits, was not possible, since both written and oral declarations were made and recorded.

Eisenbud's claim that "the same necessarily holds in the case of Randi and his collaborators" is clearly not true. We really did keep careful and complete records, and insisted in advance on a statement from Cottrell of her intentions, her limits, and her agreement on the protocol.

In a grand attempt at putting words in our mouths, Eisenbud says, "Now it is the naivest of errors... to suppose that when measures are introduced into the testing to obviate trickery the scoring rate plummets to zero." We agree. Not for a moment would we do so. In order to further illuminate the picture, I offer here two tables prepared by Irving Biederman, a psychologist at SUNY-Buffalo, who attended and recorded the tests. Table 1 shows the uncontrolled (but videotaped) tests. Table 2 shows tests that were controlled and that were *known* by Cottrell to have been videotaped. She did not suspect that the uncontrolled tests were taped.

Space limitations did not allow me to cover all of the various tests (see Table 2) that we conducted with Cottrell. Thus I cannot fault Eisenbud when he comes to his conclusions about "psi missing" based on my account. I presume he will now withdraw these claims in that respect. But I invite him to play with these figures in an attempt to find deeper meaning in them. I direct his attention to the spectacular results, shown in Table 1, of tests in which Cottrell was found, by recorded and verified evidence, to be cheating blatantly and purposely, in spite of her careful agreement before witnesses that she would not do so under any circumstances. We have the evidence.

Table 1
Uncontrolled Tests

Test	No. of Trials	Expected No. Correct by Cottrell's Estimate	No. Correct	No. Correct by Chance Expectation
Predict selection of card	4	3.69	3	.08

Table 2
Controlled Tests

	No. of Trials	Expected No. Correct by Cottrell's Estimate	No. Correct	No. Correct by Chance Expectation
Predict selection of card	3	2.77	0	.06
Match number and color only	5	4.61	0	.19
Predict person selecting highest card (4 persons)	40	36.92	0	10.00
Predict person selecting highest card (4 persons)—repeat	40	36.92	0	10.00
Predict order of cards in deck	104	95.99	0	2.00
Predict selected card	40	36.92	0	.77
Predict sequence of suits in deck	104	95.99	22	26.00
Name cards in sealed envelope (5 cards)	5	4.61	0	.10
Name order of above 5 cards	5	4.61	2	1.00
Total	346	319.34	24	50.12

The CSICOP tested Susie Cottrell. When she did not know she was being recorded, she cheated and succeeded. When controls and recording went on, and she knew about it, she failed. There is nothing significant to be found in the results, other than that Cottrell did not demonstrate the powers she claims to have and is simply a moderately talented card operator. Eisenbud's experiments leave much to be desired, and lack conviction by his own admission.

Should Cottrell wish to be tested further by the Committee, we stand ready to accommodate her. It is to be noted that, though Eisenbud knew of the availability of our facilities on an active or an advisory basis, he chose not to avail himself of these services. Had he done so, he might have saved himself further involvement with the so-far discredited Cottrell.

—James Randi

The From Our Readers section will resume in our next issue.—Ed.

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The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. To carry out these objectives the Committee:

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- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
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